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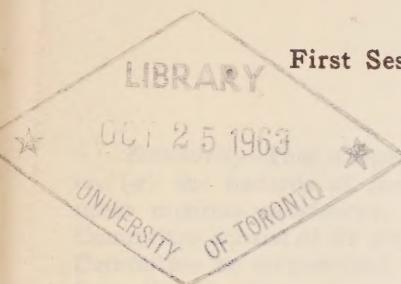


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HOUSE OF COMMONS



First Session—Twenty-sixth Parliament

1963

SPECIAL COMMITTEE

ON

FOOD AND DRUGS

Chairman: MR. HARRY HARLEY

PROCEEDINGS

No. 1 - 15

INCLUDING

PROCEEDINGS OF THE 1962-1963 COMMITTEE ON
FOOD AND DRUGS

THURSDAY, AUGUST 1, 1963

ROGER DUHAMEL, F.R.S.C.
QUEEN'S PRINTER AND CONTROLLER OF STATIONERY
OTTAWA, 1963

SPECIAL COMMITTEE ON FOOD AND DRUGS

Chairman: Mr. Harry Harley

Vice-Chairman: Mr. Rodger Mitchell

and Messrs.

Armstrong	Enns	Pennell
Asselin (<i>Richmond- Wolfe</i>)	Fairweather	Pilon
Baldwin	Francis	Roxburgh
Basford	Gauthier	Rynard
Cashin	Howe (<i>Hamilton South</i>)	Valade
Casselman (Mrs.)	Nesbitt	Whelan
Côté (<i>Longueuil</i>)	Orlikow	Willoughby—24
	Patterson	

(Quorum 13)

Gabrielle Savard,
Clerk of the Committee.



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ORDERS OF REFERENCE

FRIDAY, July 26, 1963

Resolved,—That a Special Committee be appointed to consider and report on (a) the hazards of food contamination from insecticides, pesticides, and other noxious substances; and (b) the safety and cost of drugs; that the Committee consist of 24 members to be designated later by the House; that the Committee be empowered to send for persons, papers, records, and to report from time to time and to print such papers and evidence from day to day as may be deemed advisable; and that the provisions of Standing Orders 66 and 67 be suspended in relation thereto.

TUESDAY, July 30, 1963

Ordered,—That the Special Committee on Drugs and Pesticides, appointed on July 26, 1963, be composed of Messrs. Armstrong, Asselin (*Richmond-Wolfe*), Baldwin, Basford, Cashin, Casselman (Mrs.), Côté (*Longueuil*), Enns, Fairweather, Francis, Gauthier, Harley, Howe (*Hamilton South*), Mitchell, Nesbitt, Orlikow, Patterson, Pennell, Pilon, Roxburgh, Rynard, Valade, Whelan, and Willoughby.

WEDNESDAY, July 31, 1963

Ordered,—That the Minutes of Proceedings and Evidence of the Special Committee on Food and Drugs appointed at the last session, together with all papers and records laid before it, be referred to the Special Committee on Food and Drugs appointed at this session.

Attest.

Léon-J. Raymond
The Clerk of the House

The Special Committee on Food and Drugs has the honour to present its

FIRST REPORT

Your Committee recommends that it be empowered to sit while the House is sitting.

Respectfully submitted,

Harry Harley,
Chairman.

MINUTES OF PROCEEDINGS

THURSDAY, August 1, 1963

(1)

The Special Committee on Food and Drugs met today at 2:10 p.m. for organization purposes.

Members present:—Messrs. Armstrong, Baldwin, Basford, Cashin, Côté (Longueuil), Fairweather, Francis, Harley, Mitchell, Orlikow, Pilon, Roxburgh, Rynard, Whelan, Willoughby—(15).

The Clerk of the Committee attending and having called for nominations, Mr. Roxburgh moved, seconded by Mr. Basford, that Mr. Harley be elected Chairman of the Committee.

There being no other nominations, Mr. Fairweather moved that nominations close.

Mr. Harley was declared duly elected Chairman. He thanked the members for the honour conferred upon him and assured the Committee that he will do his utmost to deserve the confidence placed on him. He paid tribute to the Chairman of the Food and Drugs Committee of the last Parliament, Mr. McDonald, who fulfilled his functions in the most able manner.

On motion of Mr. Whelan, seconded by Mr. Cashin,

Resolved, (unanimously)—That Mr. Mitchell be elected Vice-Chairman.

The Clerk read the Orders of Reference.

Standing Order 67 having been suspended by the House, Mr. Mitchell moved, seconded by Mr. Rynard,

Resolved,—That the quorum of the Committee be set at 13 members.

On motion of Mr. Rynard, seconded by Mr. Fairweather,

Resolved,—That a subcommittee on Agenda and Procedure comprised of the Chairman and 6 members to be named by him, be appointed.

Pursuant to its Order of Reference, giving the Committee power to print from day to day its Minutes of Proceedings and Evidence, it was agreed to refer to the subcommittee on Agenda and Procedure the question of deciding on the number of copies to be printed.

The Evidence taken at the last Parliament having been referred to the Committee, on motion of Mr. Basford, seconded by Mr. Armstrong,

Resolved,—That the Committee seek permission to sit while the House is evidence of the Special Committee on Food and Drugs appointed last session together with all papers and records laid before it be reprinted as an appendix to this day's proceedings.

On motion of Mr. Basford, seconded by Mr. Côté,

Resolved,—That the Committee seek permission to sit while the House is sitting.

Before adjournment, Mr. Baldwin suggested that the members of the Committee be supplied with a copy of a booklet entitled "Use of Pesticides", a Report of the United States President's Science Advisory Committee. The Clerk was instructed to obtain copies for the use of the Members.

At 2:30 p.m. the Committee adjourned to the call of the Chair.

Gabrielle Savard
Clerk of the Committee

APPENDIX

REPRINT OF

MINUTES OF PROCEEDINGS AND EVIDENCE

Nos. 1, 2, 3 and 4

OF THE

SPECIAL COMMITTEE ON FOOD AND DRUGS

(First Session—Twenty-fifth Parliament)

(1962-1963)

(Referred by the House on July 31, 1963 and reprinted
as authorized by the Committee)

(Membership 1962-1963)

SPECIAL COMMITTEE ON FOOD AND DRUGS

Chairman: Mr. R. M. T. McDonald

Vice-Chairman: Mr. Georges Valade
and Messrs.

Baldwin
Enns
Fairweather
Haidasz

Harley
Horner (*Jasper-Edson*)
Marcoux
Martin (*Essex East*)

Mitchell
Nicholson
Orlikow
Patterson
Rynard—15

(Quorum 8)

Gabrielle Savard,
Clerk of the Committee.

ORDERS OF REFERENCE

FRIDAY, December 7, 1962.

Resolved,—That a Special Committee be appointed to consider and report upon (a) the law and practices relating to the control of the introduction, marketing and use of drugs; and (b) the dangers arising from contamination of food by the use of chemicals to kill weeds, insects and other pests;

That the Committee consist of 15 Members to be designated by the House;

That the Committee be empowered to send for persons and papers and to report from time to time;

That the Committee be empowered to sit during the sittings of the House;

That the Committee have power to print such papers and evidence from day to day as may be deemed advisable; and

That Standing Order 66 be suspended in relation thereto.

MONDAY, December 17, 1962.

Ordered,—That the Special Committee on Food and Drugs, appointed on December 7, 1962, be composed of Messrs. Baldwin, Enns, Fairweather, Haidasz, Harley, Horner (*Jasper-Edson*), Marcoux, Martin (*Essex East*), McDonald (*Hamilton South*), Mitchell, Nicholson, Orlikow, Patterson, Rynard, and Valade.

Attest.

LEON-J. RAYMOND,
Clerk of the House.

MINUTES OF PROCEEDINGS

WEDNESDAY, December 19, 1962.

(1)

The Special Committee on Food and Drugs met today at 2 p.m. for organization purposes.

Members present: Messrs. Baldwin, Enns, Fairweather, Haidasz, Harley, Martin (*Essex East*), McDonald (*Hamilton South*), Nicholson, Orlikow, Rynard, and Valade—11.

The Clerk of the Committee attending and having called for nominations, it was moved by Mr. Rynard, seconded by Mr. Fairweather, that Mr. McDonald be elected Chairman of the Committee.

Mr. Valade moved, seconded by Mr. Haidasz, that Mr. Rynard be elected Chairman.

And a discussion arising, Mr. Martin opposed the withdrawal of Mr. Valade's motion and requested a recorded vote. The Clerk, being bound by the Rules for the election of the Speaker, stated that she proposed to put the first motion first.

Whereupon Mr. Baldwin expressed the view, in which the Committee concurred, that Dr. Rynard's contribution would be more valuable as a member than as Chairman of the Committee.

By consent, Mr. Valade withdrew his motion.

The first motion being put, Mr. McDonald was unanimously elected Chairman of the Committee.

Mr. McDonald took the Chair and thanked the Committee for the honour conferred upon him.

On motion of Mr. Enns, seconded by Mr. Fairweather,

Resolved,—That Mr. Valade be elected Vice-Chairman of the Committee.

The Chairman then referred to the part of the Order of Reference giving the Committee the powers to sit during the sittings of the House, and to print such papers and evidence from day to day as may be deemed advisable.

On motion of Mr. Martin, seconded by Mr. Baldwin,

Resolved,—That a Subcommittee on Agenda and Procedure comprised of the Chairman and the Vice-Chairman and one representative from each of the Opposition parties be appointed.

After discussion, it was agreed that the Committee set the number of proceedings to be printed at a subsequent meeting.

At 2.25 p.m., on motion of Mr. Nicholson, the Committee adjourned to the call of the Chair.

THURSDAY, January 24, 1963.

(2)

The Special Committee on Food and Drugs met at 9.30 a.m. this day. The Chairman, Mr. R. M. T. McDonald, presided.

Members present: Messrs. Baldwin, Fairweather, Haidasz, Harley, Horner (*Jasper-Edson*), McDonald (*Hamilton South*), Mitchell, Nicholson, Patterson, Rynard, and Valade—11.

The Chairman observed the presence of a quorum. The Clerk of the Committee read the Orders of Reference.

The Chairman announced that, in accordance with the resolution adopted at the first meeting, the following members had been chosen to act with him and the Vice-Chairman on the Subcommittee on Agenda and Procedure, namely: Dr. Haidasz, Mr. Orlikow, and Dr. Marcoux.

At a meeting of the Subcommittee the Chairman stated, it was decided that the Chairman should make a general statement with regard to the terms of reference and then proceed to consider the Agenda that was prepared for the Committee.

Accordingly, the Chairman read his statement into the record including the list of proposed witnesses as well as a schedule of meetings which the Committee approved tentatively.

It was agreed that notice be sent to all the suggested witnesses expressing the desire of the Committee to call them at a later date.

After discussion, it was further agreed that the name of the Minister of Forestry and his officials be added to the list and that the Chairman contact the Department of Justice with a view to having a statement regarding the jurisdiction of the Committee.

On motion of Mr. Valade, seconded by Mr. Horner,

Resolved,—That 750 copies in English and 750 copies in French of the *Minutes of Proceedings and Evidence* be printed.

Agreed,—That the Committee seek permission of the House to sit in Montreal on Thursday, Friday and Saturday morning, February 14, 15 and 16 next.

At 11 o'clock, on motion of Mr. Baldwin, seconded by Mr. Mitchell, the Committee adjourned until Tuesday, January 29, at 9.30 a.m.

Gabrielle Savard,
Clerk of the Committee.

PROCEEDINGS

THURSDAY, January 24, 1963.

The CHAIRMAN: We have a quorum. First of all, I would like again to thank the members of the committee for electing me chairman of this committee.

We will commence by having the clerk of the committee read the complete terms of reference so that we all know where we stand.

The CLERK OF THE COMMITTEE:

FRIDAY, December 7, 1962.

Resolved that a special committee be appointed to consider and report upon (a) the law and practices relating to the control of the introduction, marketing and use of drugs; and (b) the dangers arising from contamination of food by the use of chemicals to kill weeds, insects and other pests.

That the committee consist of 15 members to be designated by the house;

That the committee be empowered to send for persons and papers and to report from time to time;

That the committee be empowered to sit during the sittings of the house;

That the committee have power to print such papers and evidence from day to day as may be deemed advisable; and

That standing order 66 be suspended in relation thereto.

The CHAIRMAN: Thank you. The subcommittee on agenda and procedures, comprised of your chairman, vice-chairman, Mr. Valade, Dr. Haidasz, Mr. Orlikow and Dr. Marcoux, met on Tuesday of this week at 11.45 a.m. to discuss the over-all agenda that was prepared by your chairman, and we had a general discussion on the terms of reference. At that time it was decided that the chairman should make a statement with regard to the terms of reference and then proceed to go through the agenda that was prepared for your consideration.

I have several copies of remarks, if some members would like to have a copy. Following this, we then can have a general discussion if the members of the committee deem it to be in order.

The first statement I should like to make concerns the chairman's views related to the terms of reference. I think it probably should be looked at in three ways: safety of drugs, safety of pesticides and the possibility of investigation of prices.

As indicated in the terms of reference, I think the main purpose of this committee is to check into the responsibility of all people in the drug business in Canada in regard to the safety of drugs and into the introduction and handling of drugs and pesticides as well as the marketing of these drugs for public use.

I might say that the report of the special committee of the Royal College of Physicians and Surgeons on drugs will be introduced into the house today and this will enable the members of this committee to become well informed of this special committee's report. I am sure it will assist you in our future discussions.

As far as the price situation is concerned, I, as your chairman, want to be fair about this. I think the Minister of National Health and Welfare has given us certain powers. On December 17, 1962 at page 2242 of *Hansard*, he stated:

Mr. Speaker, in closing this debate I should like to point out that I think it is probably up to the committee itself to determine the definition of the word "marketing" in the resolution.

If we do this in an orderly way—and I hope in a non-political way—we might be of service to the people of this country.

I have had passed out copies of the agenda and, with your permission, I would like to start with the drug situation in connection with safety aspects and then go on to the pesticides and contamination of food, followed by the price discussion at the end. In this way we will be able to proceed in an orderly way.

The first section is the drug safety section which, I think, should be broken down into subsections, as discussed by the subcommittee. The first section would deal with the law and practices relating to the control of the introduction, marketing and use of drugs in Canada and this, no doubt should be broken down into a number of sections:

1. (a) The control of the introduction, marketing and use of drugs under the Food and Drugs Act and the regulations; (b) preclinical testing of drugs with reference to an evaluation of the safety of new drugs by means of tests on animals; (c) existing practices in respect of the testing of drugs in humans for the purpose of assessing safety and effectiveness; (d) a general appraisal of the present day practices in respect of the preclinical and clinical testing of drugs for marketing, and (e) existing practices in respect of the marketing of drugs.

2. Report by the chairman of the special committee of the Royal College of Physicians and Surgeons, under the direction of Dr. Brien. As indicated before, this report will be tabled in the house today by the Minister of National Health and Welfare and,

3. Report on existing legislation in various countries pertaining to the testing and distribution of drugs.

I would like to go into detail in the drug section point by point.

2. (a) It is my feeling that the Minister of National Health and Welfare Honourable J. Waldo Monteith, should make a statement pertaining to the terms of reference and give an explanation of the government's policy in this regard.

2. (b) The director of the food and drug directorate should explain the particular sections of the Food and Drugs Act and regulations which provide him with the authority to control the introduction of drugs into Canada.

He should explain the administrative procedures which are followed within the directorate to have a new drug released to the public for clinical and general use.

The director should explain the limitations in the existing act and regulations in respect of the control of both new and old drugs, which he feels are lacking.

Differences in the regulations in the United States and Canada in the handling of new drugs should be explained; for example, prescription drugs, research, preclinical requirements, effectiveness data and advertising.

The director should explain any difficulty pertaining to personnel make-up and so on, and perhaps mention any recruiting and understaffing problems.

2. (c) Pharmaceutical manufacturers should be asked to present the committee with a report on existing practices in respect of the preclinical testing of drugs. They should be asked to outline the type of preclinical testing which is carried out on various classes of drugs before the drugs go into clinical trials and give an evaluation of the effectiveness of present testing procedures in the prevention of serious side effects in humans during clinical trials, and later when the drug is released for general use.

In their report, they should give a description of how they transmit their information to the druggists and physicians in the country as a whole, with particular reference to their advertising brochures.

In this connection I might mention three names:

Dr. Armand Frappier, Directeur. Institut de Microbiologie et d'Hygiène de l'Université de Montréal, Dr. J. Parker, Director, Research, Chas. E. Frost and Co., Montreal, Dr. J. D. McColl, Director, Pharmacological Research, Frank W. Horner Limited.

There is another list of manufacturers and professional people that your chairman has at his disposal, which can be used to facilitate our investigation.

2. (d) Pharmaceutical manufacturers should provide the Committee with a report on these practices in respect of the clinical trials which are carried out in advance of the general release of new drugs. This report should cover at least the following:

- (i) Information on their selection of clinical investigators, for example, what is their criteria of acceptability for the selection of qualified investigators?

What part does the manufacturer's representative play in actually planning the clinical trial?

Are these trials carried out in hospitals?

What is the criteria of acceptability for a new drug?

- (ii) Any specific recommendations concerning existing legislation on new drugs on which they would like to comment pertaining particularly to the safety element.

There are two names for your consideration here, Dr. K. K. Ferguson, Director, Connaught Laboratories, Toronto, Ontario and Dr. L. Smith, Medical Director, Ayerst, McKenna and Harrison Limited, Montreal, Quebec.

The references are the same as I have read out for section 2 (c), pertaining to the other witnesses that may be called.

2. (e) Any expert or experts in clinical medicine should be called to give an appraisal of existing requirements respecting the preclinical and clinical testing of drugs before their release for general use. He, or they, should answer such questions relating to, for example, are we doing all that can be done in our preclinical and clinical testing of drugs to safeguard the public and so on?

There are three gentlemen indicated here who are eminent in the field in the United States. I have a list of Canadian people but it is very lengthy and that is why I did not incorporate it in this statement. We have: Dr. J. T. Litchfield, Director, Experimental Therapeutic Research Section, Lederle Laboratories, New York, Dr. J. Holland, Medical Director, American Home Products, New York and Dr. K. K. Chan, Director, Pharmacological Research, Eli Lilly and Company, Indianapolis.

We have an extensive list of eminent doctors and professors in Canada whom the committee may like to consider at a later date.

2. (f) Pharmaceutical manufacturers should be requested to present to the committee the various methods which are used to promote the sale of drugs in Canada. Such methods as advertising, labelling and detailing of drugs, and qualifications of drug representatives in the field should be examined by the committee. Consideration of their quality control practices would be advisable.

- (i) Canadian Pharmaceutical Manufacturers Association.

- (ii) Canadian Pharmaceutical Association.

2. (g) It would appear to be advisable to hear from a general practitioner, or practitioners, about the impact of all these various methods of drug promotion on the practice of medicine and whether he or they would have any comment to make on present-day practices in so far as they may effect the safe administration of drugs.

A practicing physician or physicians appointed by the Canadian Medical Association.

2. (h) The committee should investigate ways and means of informing the public of the misuse of drugs in the home; for example, making sure that drugs are out of the reach of children; cleaning out medicine cabinets regularly and so on.

Mrs. A. F. W. Plumtre, President, Canadian Association of Consumers, Ottawa.

Information officers of the Department of Health and Welfare should be called.

3. The Chairman of the special committee of the Royal College of Physicians and Surgeons should be called to present to the committee the recommendations in that committee's report. They should inform the committee the reasons for the recommendations which have been made and be expected to answer questions. They will probably require other members of the committee to assist him in answering questions.

Terms of reference of this committee are:

To examine critically and objectively our present procedures for dealing with new drugs, the requirements of the regulations, and any other matters that, in the opinion of the committee, are relative to the issue. I should point out that the purpose of the new drug regulations is to ensure safety.

Dr. F. S. Brien, Chairman

Dr. E. A. Sellars and Dr. R. Dufresne.

4. In order for the committee to have a better idea of how the sale and marketing of drugs are controlled in other countries, it would be advisable to have someone appear before the committee and outline some of the regulations which are in effect in various countries. The World Health Organization has a unit which deals with standards for pharmaceuticals. The head of the unit should be able to provide the committee with details on existing legislation in various countries and be able to give a limited appraisal of existing legislation.

Mr. Paul Blanc, World Health Organization, Geneva, Switzerland.

The next section of the proposal is a list of professional people, professional associations and individuals that might be called. I do not have the list of manufacturers because the list is as long as your arm and I think we can trust the subcommittee to bring proper proposals before this committee in respect of this aspect. If you like I will go through the list of witnesses that we propose calling for your consideration in these terms and their qualifications or shall I just take it as read?

I think perhaps I should go over them. They are: Dr. A. D. Kelly, General Secretary, The Canadian Medical Association, 150 St. George Street, Toronto 5, Ontario; Mr. J. C. Turnbull, Secretary-Manager, The Canadian Pharmaceutical Association, 221 Victoria Street, Toronto, Ontario; Dr. E. W. Bensley, Secretary, The Pharmacological Society of Canada, Montreal General Hospital, 1650 Cedar Avenue, Montreal, Quebec; Dr. John C. Laidlaw, President, The Canadian Society for Clinical Investigation, 36 Hudson Drive, Toronto, Ontario; Dr. W. W. Tidmarsh, Secretary, The Canadian Paediatric Society, 79 Percival

Avenue, Montreal 28, Quebec; Dr. J. Wendell MacLeod, Secretary, Association of Canadian Medical Colleges, 710 Albert Avenue, Saskatoon, Saskatchewan; Dr. Don. W. Gullett, Secretary-Treasurer, The Canadian Dental Association, 234 St. George Street, Toronto, Ontario; Dr. L. P. E. Choquette, Executive-Secretary, The Canadian Veterinary Medical Association, P.O. Box 416, Ottawa 2, Ontario, and Dr. Georges Filteau, President, College of Pharmacists of Quebec, 1290 St. Denis Street, Montreal, Quebec.

Those are the professional associations that I have listed in the report.

Then we have a list of trade associations as follows: Mrs. A. F. W. Plumtre, President, The Canadian Association of Consumers, 1245 Wellington Street, Ottawa 2, Ontario; Mr. Stanley N. Condor, General Manager, The Canadian Pharmaceutical Manufacturers Association, 301-311 Royal Bank Building, 90 Sparks Street, Ottawa, Ontario.

I will have my French colleague read the last one.

Mr. VALADE: The last one on the list is: M. Jean-Marie Pepin, Secrétaire, L'Association des Fabricants du Québec, de Produits Pharmaceutiques, C.P. 125, Station Youville, Montreal 11, Quebec. That is the Secretary of the Association of Quebec for the manufacturing of drugs.

The CHAIRMAN: I have next a list of the individuals proposed in respect of this section which is as follows: Dean F. N. Hughes, The Faculty of Pharmacy, University of Toronto, 46 Gerrard Street East, Toronto 2, Ontario; Docteur Armand Frappier, Directeur, Institute de Microbiologie et d'Hygiène, de L'Université de Montreal, 2900 Boulevard Du Mont-Royal, Montreal 26, P.Q.; Dr. John F. McCreary, Dean, The Faculty of Medicine, University of British Columbia, Vancouver, B.C.; Dr. K. J. R. Wightman, Professor of Medicine, University of Toronto, 46 Gerrard Street East, Toronto 2, Ontario.

Dr. J. K. W. Ferguson, Connaught Medical Research Laboratories, University of Toronto, Toronto, Ontario; Dr. F. C. Fraser, Professor of Genetics, McGill University, Montreal, Quebec; Dr. John O. Godden, Associate Editor of C.M.A. Journal; Dr. Elizabeth Hillman, Head of Poison Centre of Montreal's Children's Hospital, Montreal, Quebec; Dr. Rabinowitch, P.O. Box 216, Hanover, Ontario; Dr. O. Brzeski, Sandoz Pharmacy Company, Montreal, Quebec; Dr. Hans Selye, Montreal, Quebec; Professor William Boyd, Toronto, Ontario; Dr. J. G. Foulks, University of British Columbia; Dr. E. E. Daniel, University of Alberta; R. Christie, Professor of Medicine at McGill University, Montreal, P.Q.

Dr. Ford, Department of Medicine, University of British Columbia, Dr. McNeil of Calgary, Dr. Roger Dufresne of the special committee of physicians and surgeons, Dr. D. E. Cameron, Allan Memorial Institute of Montreal, Dr. A. Hoffer, University of Saskatchewan, Dr. Tyhurst, University of British Columbia.

That is the first section on drugs, and if you will turn to the end of your report you will see a schedule of meetings that I have prepared for the consideration of the committee. I think that before we get into pesticides, we should go over this agenda so that we can consider safety as a whole.

The following is the schedule of meetings of the special committee on food and drugs: January 24—this morning a general discussion of the report of the chairman of the subcommittee was proposed.

January 29, that is next Tuesday, at 9:30 a.m. it is proposed that the Hon. J. Waldo Monteith, Minister of National Health and Welfare give his statement, followed by Dr. C. A. Morrell, director of the food and drug directorate, Ottawa, pertaining to the policy of the government and the position of the directorate as indicated in the first part of my statement; January 31, 9:30 a.m., a continuation of that discussion.

February 5, 9:30 a.m., it is proposed that members of the special committee of the Royal College of Physicians and Surgeons, drug investigation committee, Dr. S. S. Brien, chairman, Dr. E. A. Sellars, and Dr. R. Dufresne be called to give witness pertaining to their report, which by that time will have been in our hands as I believe it is going to be tabled in the house today.

On February 6, 9:30 a.m. and February 7, 9:30 a.m., we will continue with discussions, if necessary, of the investigation of the committee as I mentioned above.

February 12 and 13, we will visit Montreal to see first hand clinical research and manufacturing facilities, to include units at the Hôtel-Dieu hospital under the directorship of Dr. Jacques Genest, Ayerst, McKenna and Harrison Limited, biological and pharmaceutical chemists, and Charles E. Frosst and Company, and their Kimm laboratories.

February 14—we can have a discussion on that later. I do not think the committee should crowd its hearings because if we bring witnesses from all over the country or from the United States or anywhere else, we should leave ample room in which to give them consideration so that they will not have to stay here for two or three weeks.

Mr. HAIDASZ: Are we going to be allowed to discuss this agenda later?

The CHAIRMAN: Yes; at the end of the discussion I want to throw the whole section open for discussion on drug safety and on the agenda.

February 19, 9:30 a.m., start receiving evidence from professional associations, trade associations and professional individuals, all relating to section "A" of the terms of reference. "The law and practices relating to the control of the introduction, marketing and use of drugs." (safety)

February 26, 9:30 a.m., Mr. Paul Blanc, World Health Organization, Geneva, Switzerland who has kindly consented to come that week, if we want him to.

Meetings in future will be determined at a later date.

Can we now have a discussion on the agenda as outlined? The reason we kept the special associations and professional people off until February 19 is that we wanted the permission of this committee to notify all the proposed witnesses of our intention to ask them, thereby giving them ample time to prepare their statements or reports to this committee. We thought that by having the departmental officials and the special committee of the Royal College of Physicians and Surgeons, first we would do this in a very orderly way. Could we have a discussion of the schedule, or would you like an over-all discussion of the drug situation?

Mr. MITCHELL: If I might intervene here for a moment, when you spoke of government officials I noticed that R. C. Hammond was not included in your group. As you know, he is the director of narcotic control, and under his direction are the special schedule G drugs. This is very necessary for this committee's information.

The CHAIRMAN: This was discussed, and I did not propose a list of all the people within the Department of National Health and Welfare pertaining to this problem because I thought that when the minister made a statement he would have all the people pertaining to every section of the legislation under his administration with him and they could give us a list of the people that are necessary to investigate this problem completely.

Mr. MITCHELL: He would be included under the food and drug directorate.

Mr. HAIDASZ: I was just going to make a statement on the schedule of meetings, and specifically the meetings scheduled for February 12 and 13—visits to Montreal.

The CHAIRMAN: If I might interrupt, this has not been actually scheduled; I have just made some preliminary phone calls and suggested certain dates which can be changed at the wish of the committee. I wanted to do it in an orderly way.

Mr. HAIDASZ: Members of the Liberal party on this committee would be attending the annual meeting of the advisory council of the National Liberal Federation on February 12, therefore February 12 would not be a suitable date for us.

The CHAIRMAN: Might I suggest then, if it is the wish of all the members of this committee, that we could transfer the date from February 12 to February 13 and 14, in other words, we would transfer the date to Wednesday and Thursday, and this would get away from any change. We could change this easily to another week.

Mr. HARLEY: There are other things on February 13. Could we make it February 14 and 15?

The CHAIRMAN: I am in the hands of the committee. The only reason these dates were announced in the report is that I talked to these people about a certain date. We can have it any day or week you want. Is it convenient for the members of the Liberal party to come on February 13 and 14?

Mr. NICHOLSON: If we are tied up on February 11 and 12 it would seem to me that rather than go down on the evening of February 12 it would be better to go down on February 14 and 15.

The CHAIRMAN: Is it agreeable to the committee that we go to Montreal—and we must ask permission of the house to do this—on February 14 and 15 instead of February 12 and 13?

Mr. FAIRWEATHER: There is no Place Pigalle in Montreal.

The CHAIRMAN: We will not have to worry.

Mr. FAIRWEATHER: These kind people are safe.

Mr. HARLEY: I did not have time to go through the complete list of witnesses as far as their qualifications are concerned. I was thinking particularly of drugs. Was there any thought of calling someone who might be an organic chemist not connected with a drug organization?

The CHAIRMAN: Yes, at the end of the whole statement I wrote a paragraph—I probably got ahead of myself—where any person that the committee wants in an unbiased way, in other words not associated with a manufacturer or a research institute for profit, should be called by the committee, and if any members of the committee have witnesses they wish to call, please submit their names.

Mr. HARLEY: I was thinking of an organic chemist and a biologist.

The CHAIRMAN: Have you a name?

Mr. HARLEY: Not offhand. The only organic chemist I can think of is Professor Rogers of the University of Toronto.

The CHAIRMAN: I will have a list, prepared by the department, of eminent men in that field so that the subcommittee or the committee can consider it.

Mr. BALDWIN: Mr. Chairman, first I would like to compliment the chairman and those members of the subcommittee who have so painstakingly and thoroughly prepared this report. I think it will make our task a lot easier. It indicates an excellent series of meetings.

I would like to make the suggestion that this is a matter of which we have had some inkling in the proceedings in the House of Commons already. I refer to the matter of control. I think this will be particularly so when we

come to deal with the second branch of our inquiry, namely, pesticides, insecticides and so on; and, judging from what you have said, we shall be making most careful inquiry into the existing situation, bearing in mind that we will be making certain recommendations.

That brings up the question of just how far, in a divided federal jurisdiction, we, as the parliament of Canada, are going to be able to make suggestions which will be valid. I suggest that we might consider calling—if the committee so wishes—somebody from the Department of Justice. I think this should be done at the latter part of the proceedings, and it should be someone who would be able to tell us on what basis the present Food and Drugs Act rests, and on what basis the establishment and legality of any recommendations we make in the future will rest; and at the same time, we should bear in mind that provincial governments all have some jurisdiction as well. This might give us some indication as to what steps have been taken by the provincial governments along the lines into which we are making inquiry.

The CHAIRMAN: We shall check into that and have it put on the agenda, if it is the pleasure of the committee.

Mr. MITCHELL: I would like to commend the committee on accepting the invitation to go to visit those two pharmaceutical manufacturing plants in Montreal. It is not particularly new to some of us on this committee, but it will be particularly new, and very interesting, for those who have never had that opportunity. It should also satisfy some of the questions which might be asked about the subject of control of pharmaceutical preparations and of other chemicals through to their being found in marketable form. I think it should serve to answer some of the questions which might be asked.

Mr. NICHOLSON: I am also very pleased to see that the visits to these manufacturing plants are included. I wonder if, in the course of our visit to Montreal, we might include a visit to a proposed pharmaceutical manufacturer whose background is not purely Canadian, but more that of North America. I have in mind Ciba, whose parent office is in Switzerland, or something of that kind.

The CHAIRMAN: We will take a note of that for consideration by the committee. The only problem of this visit is that it means that for two days, to be visiting these three people that we recommend initially, we would have to be running around the place. If we crowd in too many people in that two-day visit I do not think we would get any value out of the investigation. But if the committee wishes to make the visit at some particular time, I think it might be in order for us to go.

Mr. NICHOLSON: I know something about the chemical industry and of the differences which exist between Canada and Europe, and the United States and Europe in that regard.

The CHAIRMAN: Would you give me your permission to investigate this, Mr. Nicholson, and I shall report on it at the next meeting?

Mr. HORNER (*Jasper-Edson*): I think a lot of these European companies do not have full manufacturing facilities in Canada, but I have in mind one of them which may do all its North American testing in Canada. I think it is Ayerst, McKenna and Harrison Ltd.

Mr. MITCHELL: I think the European companies with branches in Canada and the United States would be more in the way of packaging operations than that of test control.

Mr. VALADE: May I ask of a question of Mr. Nicholson for clarification? Are you talking about the rough material, the production of raw material which goes into chemicals and pharmaceuticals?

Mr. NICHOLSON: Yes.

The CHAIRMAN: May I go on to the next section. I mean the terms of reference. Section (B) reads: "The dangers arising from contamination of food by the use of chemicals to kill weeds, insects and other pests".

1. "Chairman's Remarks." Well, I have made my remarks at the first of this meeting.

2. Control of pesticide residues in foods under the Food and Drugs Act and Regulations.

3. Registration and control of pesticides under the Pest Control Products Act.

4. Role of the provincial entomologist in the use of pesticides.

5. The toxicological testing of pesticides prior to use.

6. Industrial and commercial evaluation pertaining to development of pesticides.

7. The need for the use of pesticides in agricultural production.

8. Current agricultural practices relating to the use of pesticides in Canada and trends for the future.

1. I have already made my remarks.

2. (a), statements of the Minister of Health and Welfare, the Honourable J. Waldo Monteith, and the Deputy Minister of National Health and Welfare, Dr. G. D. W. Cameron, or any other interested people we have pertaining to the responsibility of the government and with reference to the health and welfare department in this regard.

2. (b) The director of the food and drug directorate should outline the basic legislation and the regulations which have a bearing on the control of pesticide residues in foods. The administrative procedures followed in handling of a submission regarding a pesticide and the division of responsibility between the Department of Agriculture and the directorate in the handling of such submissions, should be discussed. The information required for the establishment of a tolerance for residues of a pesticide in foods should be given as well as the procedures employed in arriving at a satisfactory level, and future safety in years to come. Terms such as toxicity, hazard, acceptable daily intake, permissible level and tolerance should be carefully explained.

A statement of the number of tolerances established and the pesticides which are permitted on a no residue basis should be provided as well as the number of crops involved. Problems relating to methods of determination of the pesticide residues should be discussed.

Results of surveys of pesticide residues in food in Canada, the action taken when excessive residues are encountered, the manpower available to the directorate for this work and the type of investigation currently underway by the department should be discussed.

Dr. C. A. Morrell, food and drug directorate, director, Department of National Health and Welfare, or any other person we deem necessary, or that Dr. Morrell would like to bring with him.

3. A representative of the Department of Agriculture should be called to explain their responsibilities under the Pest Control Products Act. This should include the information required for registration, division of responsibility between Department of Agriculture and the food and drug directorate. Labelling requirements including all advertising material re warning statements and antidotes should also be explained.

The department should also give the number of registrations under the act, and the effectiveness of the present legislation.

Mr. S. C. Barry, deputy minister of agriculture.

Mr. R. C. Phillips, director, plant products division, Department of Agriculture, Ottawa.

Mr. C. H. Jefferson, chief, feed, fertilizer and pesticide section, plant products division, Canada Department of Agriculture, Ottawa.

4. A provincial entomologist should explain his role in the development of the provincial spray calendars and the basis on which decisions regarding recommendations for use of specific pesticides are reached.

Professor Harold Gobles, provincial entomologist for Ontario, entomology department, federated colleges, Guelph, Ontario.

5. A toxicologist could explain to the committee the toxicological testing required on pesticides before they are considered for use on agricultural crops. He should be asked such questions as to the validity of animal tests in relationship to the safety factor in humans, the adequacy of such tests and related problems.

Dr. Julius M. Coon, Professor of Pharmacology, The Jefferson Medical College, Philadelphia, Pennsylvania. (Chairman of the subcommittee on toxicology, food protection committee, national research council, Washington, D.C.)

6. A representative of the agricultural chemicals industry should be called before the committee to outline the procedures which they employ in the development and testing of a pesticide.

This testimony should include a discussion of toxicity tests conducted on experimental animals and the field tests carried out on a pesticide.

The Canadian Agricultural Chemicals Association could be asked to suggest a representative of their industry.

7. There should be an extensive discussion on the use and need for pesticides in agriculture. A competent agricultural scientist should be called to discuss this aspect of the problem—Dr. D. A. Chant, officer-in-charge, entomology laboratory, Canadian Department of Agriculture, Vineland, Ontario.

8. An agricultural scientist with a broad knowledge of the use of pesticides should be asked to discuss current agricultural practices in Canada. He should be asked to discuss alternatives such as biological control of insects and other pests as well as trends for the future.

He should also be asked if there are any papers or information at his disposal relating to studies carried out by foreign governments in this field.

Dr. Henry Hurtig, associate director, pesticides, programme directorate, research branch, Canadian Department of Agriculture, Ottawa.

Dr. Robert Glen, assistant deputy minister, research branch, Canadian Department of Agriculture, Ottawa.

There are a good many other persons in this field who could be called. I anticipate this question being asked: There are writers of books such as Rachel Carson who take a very extreme view, and I think all members of the committee should avail themselves of the opportunity of reading those books.

Eminent men in the fields of pharmacology, therapeutics and chemistry should be called to give evidence in relation to the possible harmful effects on the human body in the use of insecticides, and recommendations to minimize these harmful effects, if any.

There is a list I have prepared. It is not complete because I did not have an opportunity to get the companies. However, I will go over it briefly. The professional associations include the following:

Dr. E. H. Bensley, secretary, The Pharmacological Society of Canada, Montreal General Hospital, 1650 Cedar Avenue, Montreal, Que.

Dr. A. D. Kelly, general secretary, The Canadian Medical Association, 150 St. George Street, Toronto 5, Ontario.

Mr. P. H. G. Michael, general manager, Canadian Institute of Chemistry, 48 Rideau Street, Ottawa, Ontario.

Mr. J. E. McConnell, executive secretary, Agricultural Institute of Canada, 176 Gloucester Street, Ottawa 4, Ontario.

Then the trade associations:

Mr. Michel Chevalier, general manager, Canadian Agricultural Chemicals Association, 3405 Cote des Neiges Road, Montreal 25, P.Q.

Mr. W. K. St. John, executive secretary, National Dairy Council of Canada, Room 305, The Journal Building, Ottawa, Ontario.

Mrs. A. F. W. Plumptre, president, Canadian Association of Consumers, 1245 Wellington Street, Ottawa 3, Ontario.

Mr. John Monkhouse, executive secretary, Dairy Farmers of Canada, 147 Davenport Road, Toronto, Ontario.

The individuals include Dr. Mark Nickerson, Faculty of Medicine, Department of Pharmacology and Therapeutics, University of Manitoba, Winnipeg, Manitoba.

There are some other persons such as Rachel Carson, and although I do not have her proper title I remember her name in the book. There are no lists here of the chemical manufacturers. It is my understanding, in discussion with the agricultural section of the federal government, that a great many of the raw chemicals used in pesticides are manufactured in the United States and imported into Canada. I have asked that they prepare a list of the major manufacturers, the people to whom they sell their products, and how they go into the process. This will be a complete list so that the committee can scrupulously go through it.

I think this committee as a whole should recommend the names of any persons they might like to call in the field of pharmacology, therapeutics and chemistry in this regard.

Mr. NICHOLSON: I would like to join with Mr. Baldwin and Mr. Mitchell in complimenting you, Mr. Chairman, and the steering committee—more particularly yourself—on this very excellent memorandum which has been prepared.

It does seem to me that there is another part of the federal government which should be brought into this part of the study; that is the Department of Forestry. We spend millions of dollars a year in British Columbia—hundreds of thousands—in large wholesale spraying of forests for the purpose of killing insects. That has an effect on the food, not only because of the berries, but also the fish and wild life. I think in many ways the forestry department is almost as important as the agricultural department.

The CHAIRMAN: I thank you very much for bringing that to our attention. At our meeting the doctor in charge of research in the agriculture department did mention this. There are the soil conservation people, the cross breeding of agricultural products, and the people pertaining to wood products and wild life.

Mr. NICHOLSON: This is more than that. There is a special committee in British Columbia made up of representatives of the federal government, the department of forestry of the province and the department of lands and mines of the province as well as industry. They take a whole section of Vancouver

Island and the mainland and spray the area. They are, and have been for some time studying the effect on fish life, food, agriculture and other things. This spraying extends over miles.

The CHAIRMAN: Mr. Nicholson, might I say that in preparing the agenda in respect of this subject matter I have the permission of the committee to call the Minister of Forestry and his officials. This could be incorporated in the agenda.

Mr. FAIRWEATHER: In New Brunswick the same situation pertains. In one instance the federal Department of Fisheries sued a crown corporation. It was a joint federal, provincial and pulp and paper company venture. The fisheries department lost a lot of fingerling salmon as a result of spruce budworm spraying. There is some balance there and it may be interesting to hear the philosophy of the balance.

The CHAIRMAN: I think if Mr. Nicholson's suggestion could be adhered to we could bring in both agriculture and forestry, and in that way I think we can do things properly.

Mr. NICHOLSON: I think there is an assistant deputy minister who has a broad background of experience in respect of the tests for the control of the budworm and other insects. I am inclined to think that this assistant deputy minister or the director in charge of this branch might be more helpful rather than the minister.

The CHAIRMAN: It is anticipated that we will be discussing the aspect of the government's responsibility and therefore initially should call the minister to give a statement. Then we might have the officials of the department who are necessary in helping us complete our investigation.

Mr. RYNARD: I am wondering, Mr. Chairman, if we should follow Mr. Baldwin's suggestion and have someone from the Department of Justice so that we might have his views in respect of the various things we can do. Take, for instance, the department of lands and forests. In the province of Ontario that department is under the provincial government, and perhaps we should have their field clearly defined before we start into a federal program which may interfere with a provincial program. Let us know what our fields are. I think it might be worth while to have that made plain before we get too deeply into the matter.

The CHAIRMAN: Is there any discussion on that point?

Is it the wish of the committee that I get in touch with the Department of Justice in order to have someone prepare a statement in respect of the responsibility of this committee pertaining to the division of responsibility between the federal and the provincial governments?

Mr. FAIRWEATHER: Not if we are to be restricted.

The CHAIRMAN: No. It is not our intention that this committee is to be restricted.

Mr. VALADE: I think this committee is involved with investigating into the history and use of drugs and pesticides; we are not going to impose on any legislative or provincial jurisdiction. As a fact-finding committee I think it does not matter whether it is a provincial or federal jurisdiction. We just want to bring out the problem and, after that, the responsibility would be shared by the provincial or federal government, if it comes to a solution.

The CHAIRMAN: Is it the wish of the committee that a departmental official from the Justice Department be called to give an explanation or should we reserve this for the latter part of our hearings.

Mr. RYNARD: My thought, Mr. Chairman, was not to have any interference whatsoever. It was just so that we would know what the situation was legally. I hope I did not intimate that there should be any restrictions applied at all.

Mr. VALADE: Do you think we should call these people when we come to the recommendations of the committee at the end of our hearings? Is it the wish of the members of the committee to request their advice on this? Would that be all right?

Mr. RYNARD: It is all right. My feeling is that if we know beforehand just what the situation is we can go ahead and make recommendations.

Mr. VALADE: I am worrying about having the statement made before we start our inquiry. If we do we might be involved in some restrictions insofar as investigation is concerned.

Mr. BALDWIN: It is my suggestion that we have a very brief statement from someone from the Department of Justice along the line Dr. Rynard suggested before we deliberate and propose recommendations. However, I feel the same as anyone else, namely, that the deliberations here should be completely exhaustive and we should cover everything whether under our jurisdiction or not. When we come to make suggestions later on, then I think there should be a great interest shown not only on the part of our federal government but on the part of provincial governments as well as to where the responsibility might lie, and then at the latter part of our proceedings we might call in a representative from the Department of Justice if we think it is necessary at that time.

The CHAIRMAN: Is it the wish of the committee that I have the Department of Justice make a short statement or should we have a lengthy statement at the end before we make our recommendations.

Hon. MEMBERS: Agreed.

The CHAIRMAN: Is there any further discussion in connection with the pesticides section?

Mr. HORNER (*Jasper-Edson*): Mr. Chairman, I have in mind one section which has not been mentioned today and which I think is very important to us, particularly in Western Canada. It has to do with the grain trade, the use of pesticides and the residue in grain particularly, not only for domestic consumption but export consumption. This is vitally important to us and it is at the fore in Western Canada at the moment. I suggest that Mr. Connacher, chief testing officer in the board of grain commissioners be one of our witnesses. As well, it would be of great assistance to us if we could have from the Department of Agriculture the veterinary director general.

The CHAIRMAN: Is there any other discussion in connection with the pesticides section? If not, I will go on to the next section, namely prices and costs.

I anticipated there might be a problem in this regard and I would like to read out again what the minister said in the House of Commons on December 7 at page 2442 of *Hansard*, at which time he was replying to the suggestion that this committee investigate the cost of drugs. He said:

Mr. Speaker, in closing this debate I should like to point out that I think it is probably up to the committee itself to determine the definition of the word "marketing" in the resolution.

Since my appointment as your chairman, on December 19 I have given considerable attention to this and it is my feeling that the prime objective of this committee is the safety factor—and this was the intention of the government. However, the minister, as you will note, did give us an opening in the wording of this to discuss certain situations pertaining to the costs. As your chairman I would not want the safety aspect to get thrown into the background because I think it is the most important thing that faces this country today. We probably will have reference to the thalidomide tragedy and so on, and if we confuse the two initially we will get into trouble later on. I think we

should start our hearings on the drug safety factor and leave in abeyance consideration of the cost factor until after the restrictive trade practices commission reports. Members of this committee will be supplied with copies of this report.

The thing that I fear from the legal aspect is that many people who may be named in this report might be charged under their terms of reference and might incriminate themselves by coming before this committee and testifying on the cost of drugs. It is my opinion that if we mix up safety and the price factors or costing we will not cover what the terms of reference adequately state.

I would like to have the unanimous consent of the committee to defer the complete discussion on this section until later on—without hampering the committee in anyway—thereby leaving the matter open until the restrictive trade practices report—on which Dr. Haidasz posed a question in the house yesterday—is tabled. We were given to understand that this would be forthcoming shortly, which would be about in three weeks time, I think.

Mr. FAIRWEATHER: Mr. Chairman, I think there is another feature in connection with the costs; the royal commission on health has had exhaustive evidence on this matter and, of course, their report is expected soon.

The CHAIRMAN: If I might interrupt, Mr. Fairweather, I had another section to cover before completing my remarks.

I was going to suggest that a great many briefs were presented to the royal commission on health services pertaining to the costs and although I do not wish to hamper this committee my view is that the safety factor is of prime importance. I would ask that we delay any decision in connection with costs as interpreted in the word "marketing" in the terms of reference until after the restrictive trade practices report. If we proceeded in this way I think we would serve the purpose of this committee better.

Mr. NICHOLSON: I noticed, Mr. Chairman, that there is no reference to proprietary and patent medicines. I have received a number of telephone calls in Vancouver on this subject requesting that we discuss it. I was in receipt of these calls owing to the fact perhaps that I was the only one on the committee from British Columbia.

The CHAIRMAN: Dr. Morrell and I have had discussions with about 30 people in getting together my information. Dr. Morrell is going to clarify his position with regard to the control of drugs and at the same time I think he is going to make a reference to patent medicines and whose responsibility it is, throughout the manufacture and research into these medicines. It was the intention of the chairman perhaps to call people that do the importing of these patent medicines to prove their clinical responsibility in that regard.

Mr. MITCHELL: Mr. Paul Soucy is the gentleman in charge of proprietary and patent medicines as far as the Department of National Health and Welfare is concerned. He is in Dr. Morrell's department and I am sure he would be available to answer any questions.

The CHAIRMAN: In outlining the first section I did not want to go into too much detail and that is why I approached the chief person involved in each of these sections. However, this committee can call anyone it sees fit to call.

Are there any further discussions on the three sections we have covered?

Mr. HAIDASZ: Mr. Chairman, I think that the formation of this committee is a direct result of the thalidomide tragedy. In view of that fact I feel that the company which introduced thalidomide into Canada should be permitted to present a view following whatever evidence may be given to us by the officials of the Department of National Health and Welfare. I was wondering

whether you had given notification of these hearings to that company or whether someone from that company had notified you of their intention to appear before this committee.

The CHAIRMAN: I might say, Dr. Haidasz, that I did not want to officially write anyone until this committee had given me permission to do so, although I have received telephone calls from many manufacturers and associations.

No one from the William S. Merrell Company has telephoned or written to me, but it was the intention of your chairman to write letters to professional associations and manufacturers, professional people and research people indicating that we propose to call them at some future date in order to give them ample notice. I might say that the Merrell company was on my list of manufacturing companies to be notified. I did not include the complete list in this statement because of its length. If any members of this committee wish individuals called or companies notified other than those I have listed, I should be very pleased to have an indication in this regard.

Mr. RYNARD: Mr. Chairman, I am in agreement with Dr. Haidasz' suggestion that someone from the Merrell company be called, and I would also like to suggest that Dr. Fraser be called as soon as possible because of the fact he is an outstanding man in the genetics field.

As Dr. Haidasz has indicated, the thalidomide tragedy is the actual cause of the formation of this committee and in that regard I think someone from the Merrell company and Dr. Fraser should be called as quickly as possible.

Mr. NICHOLSON: Mr. Chairman, I should like to make one other suggestion. You have suggested in your report that we call one or more general practitioners. I am wondering also about the many articles that have appeared in *Macleans' Magazine* and other places, and whether it would be advisable to call as well as one or more general practitioners, one or more paediatricians because of the fact children are involved.

The CHAIRMAN: That is exactly why Dr. W. W. Tidmarsh, Secretary of the Canadian Paediatric Society is to be called, and it is presumed that he will bring people with him who are specialists in this field.

Mr. HARLEY: I was pleased to hear Dr. Haidasz refer to the thalidomide question. I think it should be pointed out to the individuals of the company responsible for the introduction of thalidomide into Canada that it is not our intention in having them appear before us to place them on trial or to give them the opportunity of exonerating themselves, but for the purpose of providing this committee with information in respect of the handling of drugs of this type in order that some measure can be taken to prevent any possible further tragedy.

The second item upon which I should like to touch has reference to the statement in the House of Commons regarding pesticides. There is one aspect of this matter in respect of agriculture that has not been mentioned and which I think probably should be mentioned. That is the use of drugs for cattle, which is not really considered dangerous, but which gives rise to contamination through feeding or the use of chemicals for killing weeds and pests. I have reference to drugs and several antibiotics that are used for the purposes of fattening cattle. I think this is a very important aspect that should be considered thoroughly. It is my understanding that certain drugs are being injected into cattle before they are killed which are supposed to be meat tenderizers. This is another aspect which I think should be considered.

Mr. HADASZ: I believe that one of our terms of reference covers a study of food additives especially in relation to baby foods.

The CHAIRMAN: I must apologize, Dr. Haidasz, for not bringing the list which you sent me, although I might mention that you did send a letter to me listing all those companies that you felt should be asked to appear.

Mr. HAIDASZ: I feel that as well as calling representatives from the companies which manufacture food additives, particularly in respect of children's foods, we should also have representatives appear from companies that have made available in Canada the drug known as L.S.D., namely the Sandoz company, in order to air the complaints made by the various psychiatrists in clinical research in respect of alcoholism and schizophrenia. I feel, therefore we should call some representative from the Sandoz company.

Mr. BALDWIN: Mr. Chairman, I might point out in respect of the question raised by Dr. Harley that the definition of the word "drug" itself in the act refers also to drugs used in connection with animals or human beings.

Mr. HARLEY: It was my suggestion that the drugs used for meat tenderizing and for the fattening of cattle, such as hormones, would not be covered.

Mr. HORNER (*Jasper-Edson*): Mr. Chairman, I think these are all covered in the act.

Mr. HARLEY: What does the chairman visualize as our hours of sitting?

The CHAIRMAN: This chairman visualizes a long session. It was our thought that we would meet regularly on Tuesdays and Thursdays at 9.30 in the morning and sit until 12 or 12.30. We also thought that if it was the desire of the committee to complete the evidence of a witness we should sit after orders of the day until perhaps 5.30, using Wednesday mornings from 9.30 until 10.30 in order to complete a witness's testimony of the previous day. It is also our feeling that we should deal with the drugs section first, complete that, and then consider the second section in respect of contamination of foods and insecticides.

Mr. HARLEY: I take it there would be no objection to questioning one witness in relation to the second section even though the witness was called in respect of the first section?

The CHAIRMAN: I think that will be satisfactory providing that we do not become side-tracked and involved in an extensive discussion resulting in a loss of the main theme of continuity. I do not foresee any problem in this regard.

Mr. BALDWIN: Although most witnesses will probably do so, it might be suggested to them that they prepare and send briefs to us so that we can follow the briefs at the time they are presenting their evidence. I think this practice is a very useful one. They should, of course, be informed that they will be allowed to expand upon the remarks contained in the brief.

Mr. FAIRWEATHER: I think that is a good suggestion providing we do not follow the practice of allowing the witnesses to read their long briefs. We can all read, or at least that is the assumption.

The CHAIRMAN: I think we will find that individuals representing trade and professional associations appearing before this committee will have briefs, although perhaps certain biologists, chemists, pharmacologists and professional people from universities and independent laboratories may not present briefs. They will, of course, be called on to explain their positions in respect of certain fields. I will, however, indicate in my letters to these companies and professional peoples that it would be preferable that they submit briefs to this committee before their appearance.

Mr. HORNER (*Jasper-Edson*): Mr. Chairman, one of my colleagues happens to be the medical director of S.K. and F. and has offered the use of a film in respect of the Kefauver inquiry into drugs in the United States. It is about one half hour in length. He has suggested that perhaps this committee would like to see this film and, if so, he will make it available.

The CHAIRMAN: What is the pleasure of the committee in regard to this situation?

Mr. NICHOLSON: Mr. Chairman, I wonder whether Dr. Horner has seen that film.

Mr. HORNER (*Jasper-Edson*): No, I have not, Mr. Chairman.

The CHAIRMAN: It is my opinion that the steering committee should take this suggestion under advisement and bring a report to this committee after finding out what this film contains. Certainly an extensive discussion in respect of the Kefauver anti-trust study in the United States would hamper us in our progress.

Mr. MITCHELL: Mr. Chairman, I have a copy of Senator Kefauver's amendment to the United States federal food and drug act which was presented by him at NATO last November. I happened to be on that committee and I have it in my files. It would be available any time you want to refer to it.

The CHAIRMAN: I may point out that the special committee of the Royal College of Physicians and Surgeons in their report, I understand indicated that they did make a visit to Washington to consider the safety aspect. I think that before we give any consideration to calling any witness from Washington at the government level we should hear them first so that they would not have to go through external affairs and get into a great deal of difficulty.

Mr. VALADE: I do not think the committee has been empowered to have French copies printed.

The CHAIRMAN: It will be done in order.

Mr. VALADE: In the interest of this committee we should have it done.

The CHAIRMAN: I have a list of correspondence, copies of which I will file with the clerk of the committee. These are letters I received from manufacturers associations, consumer associations, manufacturers of drugs, French associations in the province of Quebec, microbiologists, and interested people. Rather than read them all out, I will file them with the clerk of the committee and have a photostat made of them so that we will have a file on all the correspondence.

We require a motion to determine how many copies of the evidence in English and French are required.

Mr. MITCHELL: What is the usual number, is it 750 English and 250 French?

The CHAIRMAN: As the clerk advises me, it depends on the interest. I would suggest that we have initially 750 in English and 500 in French, or maybe even the same number in French because a lot of the people who are going to be called before this committee have indicated to me that they would like to keep complete documentation of what is going on in the committee so that when they do come they can serve a better purpose.

Mr. VALADE: I will move that an equal number of French and English copies be made available, and that the number be 750 of each.

The CHAIRMAN: Is it the pleasure of the committee to adopt this motion? It is seconded by Mr. Horner. All in favour? Opposed, if any?

Motion agreed to.

The only other problem will be that if we go to Montreal on that date we must seek permission of the house to have our actual sittings take place in Montreal. If we do not do this it will just be an unofficial journey, and I think it should be an official journey. If I have permission of the committee, I would like to ask this from the house. That is agreed.

Mr. NICHOLSON: Since February 14 and 15 are Thursday and Friday, might it not be wise, in case you needed to extend the visit to Saturday, to make provision to do so rather than have to make another trip down there? We are going to visits plants and factories.

The CHAIRMAN: I will be frank with you. In talking to the people in Montreal they said they would like us to come on Wednesday afternoon and use Wednesday afternoon, Wednesday night, Thursday and Friday. I anticipated some difficulty in the Wednesday night situation, as has been indicated in the house, and that is why I did not do it. I myself would prefer to have Wednesday afternoon, Thursday and Friday, but if you want to have Saturday morning, it does not matter.

Mr. MITCHELL: Mr. Chairman, what is the opposition to Wednesday evening?

The CHAIRMAN: There was no opposition except that there is a Liberal meeting on Sunday, Monday and Tuesday, and they did not want to crowd things. They also have correspondence to look after.

Mr. RYNARD: Why not arrange it for next week?

The CHAIRMAN: Except that the following week is the only week that the representative of the world health organization is available. If we could not get him, then it would be three months before we could get him again. Thursday, Friday and Saturday is fine with me.

The VICE-CHAIRMAN (*Mr. Valade*): The only point here is that production does not go on in some of the firms on Saturdays, and you may not see the operation.

Mr. NICHOLSON: Some of them operate continuously.

The CHAIRMAN: Some of the people I spoke to in Montreal indicated that they did not operate on Saturdays, and that was the reason we took the middle of the week. What is the pleasure of the committee, should it be Thursday afternoon, Friday and Saturday, or Thursday, Friday and Saturday morning?

Mr. NICHOLSON: Thursday, Friday and Saturday morning.

The CHAIRMAN: I will look after that.

Is there any other business we would like to bring before the committee? Can I have a motion for adjournment? It is seconded by Mr. Mitchell.

We will adjourn until next Tuesday at 9:30 a.m.

MINUTES OF PROCEEDINGS

TUESDAY, January 29, 1963.

(3)

The Special Committee on Food and Drugs met at 9.35 a.m. this day, the Chairman, Mr. R. M. T. McDonald, presiding.

Members present: Messrs. Baldwin, Enns, Fairweather, Haidasz, Harley, Horner (*Jasper-Edson*), Martin (*Essex East*), McDonald (*Hamilton South*), Nicholson, Orlikow, Patterson, Rynard, and Valade. (13).

In attendance: The Honourable J. Waldo Monteith, Minister of National Health and Welfare; Dr. G. D. W. Cameron, Deputy Minister of National Health; Mr. R. E. Curran, Legal Adviser, Department of National Health and Welfare; Mr. Eric Preston, Chief of Personnel Services, Department of National Health and Welfare; *from the Food and Drug Directorate:* Dr. C. A. Morrell, Director; L. I. Pugsley, Associate Director; Dr. R. A. Chapman, Assistant Director in Charge of Scientific Services; Dr. J. B. Murphy, Chief Medical Officer; Mr. M. G. Allmark, Chief of the Pharmacology and Toxicology Section; Mr. Paul Soucy, Chief of the Proprietary or Patent Medicines Section; and Mr. R. C. Hammond, Chief of the Narcotic Control Division.

The Chairman opened the meeting and informed the Committee that the dates of the proposed meetings in Montreal have been set for February the 14th, 15th, and possibly the 16th.

He invited the Minister of National Health and Welfare to address the Committee.

Mr. Monteith introduced the officials of his department who were in attendance. He read a statement, copies of which were distributed to the members, and he answered questions thereon.

At the conclusion of the Minister's remarks and the questioning thereon, Dr. Morrell presented a brief respecting the "Procedures for Examination of New Drug Submissions required by the Food and Drug Regulations" and, at the request of some members, he gave explanations as he went along.

Copy of Dr. Morrell's statement together with a chart showing the establishment of the Food and Drug Directorate were distributed to the members of the Committee, the witness being examined thereon. Dr. Morrell answered questions about the number of new drug submissions made annually, the requirements of the law, the definition of "qualified investigators", etc. He was assisted by the officials of the Department of National Health and Welfare and of the Food and Drug Directorate.

A copy of the Food and Drugs Act was also distributed to each Member.

The Minister gave a short statement on the status of the discussions carried with the provinces in regard to the rehabilitation of thalidomide babies. Assisted by Dr. Cameron, he answered various questions.

On motion of Mr. Fairweather, seconded by Mr. Horner,

Ordered,—That the Chart of the establishment of the Food and Drug Directorate be included in today's record. (*See Appendix "A"*).

On motion of Mr. Nicholson, seconded by Mr. Harley,

Resolved,—That the number of printed copies of the Committee's Minutes of Proceedings and Evidence in English including Issue No. 1 be increased from 750 to 1500, and that a sufficient number of copies be made available to the Chairman of the Committee for mailing purposes.

On motion of Mr. Orlikow, seconded by Mr. Horner,

Resolved,—That permission be sought from the House for the Committee to meet in Montreal, Quebec, on Thursday, Friday and Saturday, February 14, 15 and 16, 1963, and that the Clerk of the Committee accompany the Committee to Montreal.

The Chairman announced that the Committee would continue its hearing of the Minister and the departmental officials at the next meeting.

On motion of Mr. Nicholson, at 12.30 p.m. the Committee adjourned to Thursday, January 31st, at 9.30 a.m.

Gabrielle Savard,
Clerk of the Committee.

EVIDENCE

TUESDAY, January 29, 1963.

The CHAIRMAN: Gentlemen I see a quorum.

Before we start I should like to inform this committee that I have been in touch with the people in Montreal concerning the trip. It has been changed to Thursday, Friday and Saturday mornings, February 14, 15 and 16.

Also, Dr. Brien's special committee on new drugs will be here next Tuesday morning at 9.30. I talked to Dr. Brien on the telephone and we are endeavouring to get in touch with the other two gentlemen of that committee to make sure that they can be here at that same time.

I felt this morning, if it is in accordance with the committee's wishes, that we would hear the minister and then ask any questions we have in respect of his statement; then hear from Dr. Morrell, the director of the food and drugs directorate, and then question him in regard to his statement. I hope that is in accordance with the committee's wishes.

Some Hon. MEMBERS: Agreed.

Honourable J. WALDO MONTEITH (*Minister of National Health and Welfare*): Mr. Chairman, I wonder whether, this being the first meeting of the committee, it would be in order for me to introduce some of the officials of my department who are here with me?

The CHAIRMAN: Yes, sir.

Mr. MONTEITH: Mr. Chairman, on my right is Dr. G. D. W. Cameron, deputy minister of national health and welfare, and then Dr. C. A. Morrell, chief of the food and drug directorate; Mr. R. E. Curran, the department's legal advisor and Mr. Eric Preston, chief of personnel services.

In addition to the director, the following senior staff members from the department of food and drugs are present:

Dr. L. I. Pugsley, associate director; Dr. R. A. Chapman, assistant director in charge of scientific services; Dr. J. B. Murphy, chief medical officer; Mr. M. G. Allmark, chief of the pharmacology and toxicology section; Mr. Paul Soucy, chief of the proprietary or patent medicines section and Mr. R. C. Hammond, chief of the narcotic control division.

I think generally these will be the chief people of the department who will be available to supply information to us.

You will all have read many press reports, and heard a great deal said in the commons chamber, on the death-dealing properties of certain drugs, and on the general pollution of his environment by man himself.

In this committee, which certainly has an immense task before it, you will have an opportunity to learn at first hand of the views of the experts in medical and scientific fields. You will, we trust, ultimately be able to put this whole picture into perspective, in your own minds and in the minds of all Canadians.

The apparent effects of thalidomide will be with us through the lives of every man in this room, as its victims grow into the world.

It is our job to ensure that these victims are cared for in the best possible manner, that their needs are met to the fullest extent we can devise, and to ensure, as much as is possible, that a similar tragedy will never occur again.

But we must also bear in mind that thalidomide is still a good drug. It was its side effects, as later evidence indicated, that can be harmful. It induced sleep quickly and without ill effect, but we have learned that it should never be taken during pregnancy.

I am not standing in defence of thalidomide, but it must be pointed out that even the common headache remedy can be dangerous, and cause death, if misused.

There is no such thing as a completely safe drug. The safety factor must be weighed against the value of the drug in relation to its own known dangers.

Penicillin is an example. It has saved millions of lives. But some people, sensitive to it, have died. Should we prevent the sale in Canada of penicillin?

Canadians must be allowed to enjoy all the benefits of scientific discovery—and there have been many in recent years—but they must also be protected.

When the risks cannot be avoided, they must be reduced as much as possible to the point where the balance will be on the side of promoting health and not compounding suffering.

This committee was set up by the government with a twofold terms of reference. It is being asked to consider and report upon:

- (a) The law and practices relating to the control of the introduction, marketing and use of drugs;
- (b) The dangers arising from the contamination of food by the use of chemicals to kill weeds, insects and other pests.

I understand from the chairman that the committee will attempt to concentrate first on the drug question and I, too, will do so today.

I will, of course, follow proceedings with intense interest. I would be pleased to return at a later date to explain fully the department's role in the protection of Canadians from chemical contamination.

Both questions deserve undivided attention and I commend the committee for separating one from the other as much as possible.

The responsibility that every Canadian receive the utmost protection in the use of drugs is one that cannot be discharged by any one division of government. The burden must be shared by manufacturers of drugs, the medical profession, pharmacists and even individual Canadians.

The role of the government is not to delay or deny the benefits of science to Canadians, but to ensure that drugs reach the market only after all reasonable precautions have been taken to inform the medical profession of any risks and of any undesirable side effects.

Increased drug safety is a goal we are always striving for.

Our objective was increased safety for the public when we introduced in Parliament last October legislation reinforcing aspects of our drug control provisions.

The changes in our Food and Drugs Act provided authority to impose additional controls on the distribution of drug samples; authorized the prohibition of the sale of a drug, and emphasized that new drugs require special consideration.

Our aim is also safety when we require that a manufacturer take every precaution possible in introducing a new drug.

There must be quality control, exhaustive animal and clinical testing and the provision of detailed information to the medical profession.

It is also the responsibility of government to maintain a staff competent to administer the food and drug legislation.

The job of this staff is to provide adequate technical advice, conduct analyses and tests of drugs, do research and carry out field inspections.

Members of this committee will recall that the staff question was one of the principal points raised in the report of the special committee on new drugs of the Royal College of Physicians and Surgeons, which I tabled in the house last week.

I hope this committee will examine its report most exhaustively, as I consider that the findings and recommendations are of the greatest value.

Dr. Brien, the committee chairman, will be available for any enquiries you may wish to direct to him, and I am sure that his research into the systems employed by governments other than our own could also be of benefit to you.

Dr. Brien's committee felt that the staff of the food and drug directorate was not as large as it should be.

We are aware of this and have for some time been trying, with some success, to increase staff there.

Its director, Dr. C. A. Morrell, is here today to appear before the committee and will be available to answer questions in an effort to give you a complete picture of the directorate's operations.

There have been suggestions—and there will probably be more—that the directorate increase its staff to the point where it can conduct original research into all drugs introduced in Canada.

Some seem to think that too much onus is placed on the companies and not enough collaborating research is performed by the policing agency.

Our firm conviction is that we must insist a manufacturer accept full responsibility for something he puts his name on and sells to the general public.

Any softening of this conviction could result in the weakening of one of the principal elements of our control program for the protection of the public.

This does not mean our responsibility is lessened or that we are relying on the companies to do everything.

Our job is to see—to insist—that the companies do their job and, from time to time, to check on their work, and to carry on sufficient research and investigation in our own establishment to be able to not only check the work of the manufacturer, but to form well-based opinion on the quality of the work being done with a special eye open to possible dangers to the consumer.

Under the present system, manufacturers are required to submit detailed reports on the development and testing of drugs—tracing this process through laboratory and clinical stages. Our experts can—and do—detect shortcomings by scrutinizing these reports. They then require supplementary information.

To have our people retrace the experiments already conducted by the manufacturers would appear to be cumbersome and unnecessary. It would mean a gigantic staff, needless repetition, huge cost, and, in effect, might lead to eventual subsidization of the industry.

I don't think we could justify this to the taxpayer.

The present system has worked well. Our Food and Drugs Act is second to none in the world. It has been used as a model by the World Health Organization.

It sometimes takes years for drugs to win approval of the food and drug experts—some never do. Companies are repeatedly asked for additional information.

In the last 11 years, the directorate has passed some 2,000 new drugs through its screening process with results that were not questioned until very recently.

In other words, every possible care now is taken to ensure that Canadians are protected. And the system now used appears to be working.

But there can be improvements in any undertaking. We are looking to this special committee to make valuable suggestions for such improvements.

This is why the government called the committee. It will hear evidence from experts in many spheres and their advice will be of great help in formulating future government policy.

The thalidomide tragedy has spurred us all to greater action. The government, as you know, not only introduced new legislation, but also made plans for strengthening the food and drug directorate.

Last August, I announced to the provinces that the government stood ready to share the cost of rehabilitation of thalidomide victims. Since then, a number of fact-finding groups have been working to add to federal and provincial knowledge of the problems in this sphere. The expert committee on habilitation reported last week, and copies were tabled in the house.

There is one point that should be stressed—the problem of drug controls, and the constant exchange of technical information that is needed to make such controls completely effective, is not Canada's alone. Nations in many parts of the world have turned their attention to it in recent months.

Before the thalidomide stories had gained prominence in our newspapers, the Canadian Government took action that could have far-reaching results.

It initiated and co-sponsored a special resolution on drugs at the World Health General Assembly in Geneva.

It is hoped that the resolution will lead to an improvement in the exchange of drug information among nations of the world, and further the standardization of procedures regarding new drugs.

Prompt, world-wide exchange of information of new drug developments would help to a great degree in preventing the recurrence of a thalidomide tragedy.

In this opening statement I would like to wish members of this committee every success in their deliberations. They have taken on an onerous task, the completion of which should result in great benefit to all Canadians.

Mr. Chairman and gentlemen, I might just add that naturally I will be available and will be at the committee's beck and call at any time it might wish to have me before it. It does happen that other meetings are frequently held on Tuesdays and Thursdays, and at certain times perhaps I could be excused from this committee's meetings although I will always be available for questioning. I am wondering whether this will be satisfactory, and I make this request so that you will appreciate why I perhaps am not present at every meeting of this special committee.

The CHAIRMAN: I would think that would be satisfactory. Is this agreeable to the committee?

Some Hon. MEMBERS: Agreed.

The CHAIRMAN: Gentlemen, has anyone any questions to ask?

Mr. ORLIKOW: Mr. Chairman, I should like to ask the minister several questions. First of all, I have had some correspondence with people in the field such as doctors, who are still concerned as to whether the department actually has the authority to order the withdrawal temporarily or permanently of a drug which has been approved, but in respect of which in latter stages there may be new evidence indicating there are difficulties. It has been said again and again by people in the field that this was a primary difficulty in respect of thalidomide, and that after some information was available which should have indicated that at least the use of the drug should be temporarily suspended, it was not because the department had to work more or less by voluntary co-operation and that the department therefore waited because of certain uncertainties. Certainly we would all hope that there would not be a recurrence of what happened with this drug, but if there were another incident like this, does the law, as it is now written, give the department the authority to order a drug company to halt the distribution and to withdraw immediately all the drugs which have been investigated?

Mr. MONTEITH: Yes, we believe it does; by putting the drug under schedule H we prohibit the distribution, the sale, and so on of a drug. We can do this by order in council.

Mr. ORLIKOW: I think this is pretty satisfactory.

I would like to ask Mr. Monteith another question. On December 28, 1960, Dr. Morrell issued a trade information letter No. 191 which went out to a large number of people. I will read the memorandum.

In the interests of public health it is now considered necessary to strengthen the regulations under the Food and Drugs Act in respect to the conditions under which drugs are manufactured for sale in Canada. For this purpose I propose to submit the attached regulations.

The Honourable, the Minister of National Health and Welfare.

I will be pleased to have your comments and suggestions on or before March 31, 1961.

One of the points which was included, and I quote, is (i):

A system of control that will permit a complete and rapid recall of any lot or batch of a drug from the market when such is found to be unsatisfactory or dangerous.

I understand that those recommendations were never implemented. I wonder why they were not because it seems to me that that one in particular would have given the department all the authority necessary to handle the thalidomide problem. According to the information I have it was never implemented.

Mr. MONTEITH: I may stand corrected on this but my understanding is that these regulations, and any set of regulations which we bring out as indicated by that letter, are taken up with various groups in an effort to have the most satisfactory and worth while set of regulations possible.

Dr. Morrell, am I right in saying that some of these regulations are still being considered?

Dr. C. A. MORRELL (*Chief of Food and Drug Directorate*): Yes, Mr. Monteith, they are. I might say that if Mr. Orlikow reads the rest of it he will see that those records must be kept by the manufacturer, and certainly such was the case at that time; I think it was in 1960.

Mr. ORLIKOW: Yes, December 1960.

Dr. MORRELL: We certainly had the idea the manufacturer himself would do the recalling but he must keep records so that he would know how to do this in a most efficient and expeditious manner. It was our hope to have it required by law to keep such records so that the manufacturer himself could recall a remedy if necessary.

Mr. ORLIKOW: But in any case it was not done, Mr. Chairman. This is the point I am making. After Dr. Morrell has spoken I would like to ask him some questions about the whole matter, but it does seem to me, and it was brought to my attention by people in the field who expressed their opinion in a letter to me, that these regulations being put into effect would have given the department the authority needed to move much faster in the thalidomide problem. I am just curious about why there was objection from the manufacturers and difficulties which were not foreseen when Dr. Morrell sent out these proposals.

Mr. MONTEITH: Mr. Orlikow, I think we can answer your question better by questioning Dr. Morrell, and subsequently I would be pleased to speak on it.

Mr. ORLIKOW: The only reason I raise this, Mr. Monteith, is that I would like to know whether Dr. Morrell recommended it and you countermanded it.

Mr. MONTEITH: I do not recall the details of it, but I would like to hear Dr. Morrell give his side of the story.

The CHAIRMAN: To save any duplication, can we have Dr. Morrell of the drug directorate make his statement and make us aware of his views, and then both the minister and the director would be prepared to answer questions simultaneously?

Mr. ORLIKOW: I have just one other question to put to Mr. Monteith. The report which was tabled from this special committee made some pretty specific recommendations about increased staff for the department. Mr. Monteith said in his opening statement that the department was giving it favourable consideration. I forget the exact words he used. I wonder if you have accepted pretty well the precise recommendations they made and if you have accepted their recommendations as to how many more people you need. I would also like to know if you have some idea of the time it is going to take, a year or two or how long, until you get that extra number of people which they recommend.

Mr. MONTEITH: Actually the increased staff which has been requested for some little time has been the following. This was before the report came in and before we knew what the report was going to contain. We had then requested certain increases and approved increases prior to the report. In the new drug submission field they are the following: One medical officer, one technical officer, two support staff, two chemists. This is in the pharmacology and toxicology division, two chemists and one support staff. Pharmaceutical division, one chemist and one support staff; microbiology, one bacteriologist and two support staff.

Now, this has been recommended and accepted at the moment, but, as I said before, the actual report was received and the staff will again be looked over with a view to the suggestions in the report.

Mr. ORLIKOW: Those are your recommendations as far as the staff complement is concerned. Is that as far as your establishment is concerned?

Mr. MONTEITH: Yes, the increase in the staff.

Mr. ORLIKOW: But they have not yet been hired?

Dr. MORRELL: They have hired one man, but recruiting is a difficult problem I might say.

Mr. HADASZ: Why does Dr. Morrell think that recruiting is so difficult? Is it because of the wage scale or because of a lack of men qualified to fill the jobs in Canada?

Mr. MONTEITH: I still think this is a question which Dr. Morrell can answer much more readily and exactly than I can.

Mr. MARTIN: I would like to ask a question. Mr. Orlikow asked a question which may have left a wrong impression. He asked the minister if he had countermanded any suggestions made by the director. The minister then replied to that "I think we had better wait until Dr. Morrell gets on the stand." I am sure the minister did not mean to leave that impression.

Mr. MONTEITH: I certainly did not mean to leave the impression that I countermanded any suggestions made by Dr. Morrell, but I still feel the whole question could probably be better taken up by him.

Mr. MARTIN: Did you countermand any suggestions made by Dr. Morrell?

Mr. MONTEITH: Not to my recollection.

The CHAIRMAN: I think I interrupted the minister at that stage and asked the committee if Dr. Morrell could make his statement so that we could have both statements before us. Is that in accordance with the wish of the committee?

Mr. MARTIN: You did, but I thought that was the wrong procedure in view of the impression that Mr. Orlikow had left. Now, the minister has said that to the best of his knowledge he did not countermand any suggestion made by Dr. Morrell.

Mr. ORLIKOW: I did not make that suggestion. I just thought this should be in the record of the future. I have no knowledge and I made no suggestion at all that the minister countermanded any recommendations made by Dr. Morrell.

The CHAIRMAN: Could we now have Dr. Morrell's statement? It is agreed.

Dr. MORRELL: Mr. Chairman, I have prepared a statement on the procedures used by the food and drug directorate in handling new drug submissions. I think this has been distributed to each member. It may be rather dull reading but I am prepared to read it.

The CHAIRMAN: I think we should have it read.

Dr. MORRELL: Although the regulations imply that the new drug submissions should be sent to the minister, they are usually addressed to the director. If they are sent to the minister, they are sent from there to the director's office. The director's secretary sends them at once to the medical section.

In the medical section they are examined, first of all, to determine whether or not the drug in question is a new drug as defined by section C.01.301. In the great majority of cases the drug is found to be a new drug. In either case the manufacturer is notified of the receipt of the submission (usually on the same day) and if it is a new drug, pertinent information relating to it is entered on a file card and in a ledger. There are some cases where it takes a good deal longer to make a decision, but usually on the same day the manufacturer gets a receipt of the submission.

Mr. NICHOLSON: Most of us know what a drug submission is but it would facilitate matters if Dr. Morrell could explain what it is at this point.

Dr. MORRELL: I am afraid it is going to be dull. Section C.01.302 of the present regulations requires every manufacturer to submit to the minister what we call a new drug submission in respect of any drug that is new as defined in the regulations. There is a definition of the new drug in the regulations.

In the present regulations, section C.01.301, this definition appears. This submission has to be made in the form, manner and contents satisfactory to the minister. It should include all the information that the manufacturer has in respect of that drug. It should include the chemical structure, composition; the methods of control; the methods of manufacture; the labelling; the claim the manufacturer is going to make; the pharmacology and toxicology of the drug; the clinical results of the tests to discover what hazards are encountered in the use of the drug; the dosage in which the drug should be given in the usual course of treatment; the pharmaceutical form in which the drug is put up for use, and so on. All of this information on these subjects must be included in the new drug submission. It is then required that this information be filed in duplicate with the minister before the drug is put on the market in the usual commercial way. Prior to this, of course, the manufacturer must have used the drug both in the laboratory and in the clinic in order to collect the information.

Provision is now made under section C.01.307 of the regulations to allow him to do this. He must, before sending out a new drug for clinical trial, notify the minister that he is going to do so, supply the minister with a name or a distinguishing mark by which the drug is known, he must label it—there is a special statement required on the label which says “for use by qualified investigators only”—and he must send it only to a qualified investigator. He must also keep records of the reports of these investigators on the results of that clinical

trial, and if the minister, or the director in this case, requires to see these reports, he must make them available to the director for examination. That is all covered under present section C.01.307.

Mr. NICHOLSON: Thank you.

Mr. VALADE: Can I ask a question in this regard? What is the essential element required to classify a drug as a new drug in comparison with similar drugs that could be on the market?

Dr. MORRELL: There are several reasons for calling a drug a new drug. No. 1, and the one that occurs probably to all of us at once, is that it is a new chemical structure that has not been used previously in medicine. It may have been known but not used for medical purposes, or it may have been developed simply for medical purposes. These things are now appearing on the market because the pharmaceutical industry is interested in developing new products. If it is a new compound obviously it is a new drug. Now, a combination of known drugs that have not been previously used in combination, is also a new drug. It may be a combination of two or more perhaps well known drugs. This is, in most instances, called a new drug. If it is a combination of known vitamins, it is not considered to be a drug. A decision must be made as to whether the combination used is really to be considered as a new drug.

If a known drug has been recommended for a brand new use in medicine it is a new drug. Let us take as an example aspirin which has been known for 60 years or more; let us suppose that someone came out today with a recommendation that aspirin was effective in the treatment of cancer. In this case we would consider that aspirin in that context was a new drug and we would require the manufacturer to submit evidence on the effectiveness and safety of the drug under those conditions of use. If a drug has been given by the oral route, that is taken by mouth, and some manufacturer finds that it would be more effective or beneficial if injected, then we would also consider that to be a new drug. These are the main categories of new drugs and they are defined in the existing section C.01.301. A new drug therefore is not just a new compound, but it also has those connotations.

Mr. VALADE: Let us follow this line of questioning, Dr. Morrell. Did you classify thalidomide as a new drug compared to other brands of tranquilizers with other brand names in America, such as Stemetil?

Dr. MORRELL: We classified thalidomide as a new drug because it was a new chemical structure, so obviously it was a new drug. There was no debate on that with the manufacturer or with anyone else. I continue with my statement.

A clerk then prepares a routine form and the new drug submission is taken to the central registry where it is given a file number. The submission is then put into a docket, together with forms for routing and recording of comments, and sent to the associate director. The duplicate copy of the submission is kept by the medical section.

The associate director examines the submission in reference to the type of drug and the claims made for it and sends it to the appropriate laboratory section.

The laboratory, using criteria related to the recommendations for use of the drug, and those are recommendations given by manufacturers, reviews the pharmacological, toxicological and clinical work and also the chemistry, the manufacturing controls including the method of analysis. An actual trial of the method of analysis is seldom made at this stage.

It should be noted that the submission may be passed to more than one laboratory section; it may go to two or three sections if there is data or information in it requiring expert comment by specialists in different disciplines.

The laboratory people do not make their comments on the form provided but write them as a summary of the data and information given in the submission with comments on their adequacy in relation to the criteria presented in a guide used for this purpose and when they have finished with it, the submission and the comments are returned to the associate director.

The associate director studies the comments made by the laboratory people and checks them with the information given in the submission. He always examines critically the claims and proposed promotional material and frequently discusses with the laboratory people their comments, objections and suggestions on the whole subject matter in the submission. He may also discuss at this point, any questionable features in the submission with the medical section. Finally, the associate director sets down a summary on the form provided, of his own comments, remarks and recommendations in respect to the submission, and returns the submission and the accompanying file of comments to the medical section.

It is the duty of the chief medical officer together with his chemist assistant to then review all the reports and the submission itself. Special attention needs to be paid to the manufacturing controls described and to the clinical data. The nonproprietary (proper) name, if there is one, is recorded or decided upon at this time and in conjunction with the associate director, whether or not the drug should be a prescription drug. If there is any deficiency found in the new drug submission, a letter is written to the manufacturer by the chief medical officer pointing out what is missing or what is wrong with the submission and stating that further information is necessary or that something contained in it is unacceptable. Such a letter to the manufacturer states also that the new drug submission is not acceptable in its present form.

If, however, there is no objection taken up to this point and if everything else is satisfactory, the submission is sent to inspection services for a review of the labels. Labels are examined for compliance with the labelling requirements of the food and drug regulations. Inspection services also review the wording of promotional material and if they find it objectionable the matter is reported to and discussed with, the medical section. Inspection services then return the submission with their comments to the medical section. At this point a new drug card for the product in question is completed and a new drug acceptance form is made out. Very frequently a letter is also written to the manufacturer pointing out some objection to the labelling or other similar matter that must be corrected. Both the new drug acceptance form and this letter are sent to the director who signs them both and they are then mailed to the manufacturer. This is a standard form and the wording is the same for all new drugs.

The Director may be informed, at any time during this whole procedure, that there is some special difficulty arising or that disagreement with the manufacturers has occurred during the processing of the submission. Such information, depending on the seriousness of the difficulty, may lead to a conference of food and drug officers or a conference which includes the manufacturer's representatives as well as food and drug staff, for the purpose of establishing or clarifying a policy or resolving the disagreement in a manner that is proper and in conformity with the requirements of the act and regulations.

In actual practice, the number of conferences on new drugs in which the director is involved is smaller than those in which the associate director, the laboratory staff or the medical section take part. These latter meetings are fairly numerous. There is considerable correspondence and often telephone calls and visits from the manufacturer's medical or technical staff in connection with many new drug submissions.

The regional and district offices are advised by a monthly sheet of the new drug submissions received and of those pending or cleared. They receive as well, a card summarizing the new drug submissions cleared which is intended to be filed under proper (non-proprietary) name, brand name and manufacturer's name.

Processing of Supplementary Information

After a new drug submission has been accepted, any deviation in the use, composition, pharmaceutical forms, etc. from information and data given in the original submission, may be the subject of a supplemental submission. A supplement may involve a change in (1) the trade name, (2) the method of manufacture, (3) the dosage or dosage forms, (4) the method of analysis, (5) the labelling, (6) additional active ingredients, (7) additional inactive ingredients (colour, flavour, excipients, etc.), (8) additional claims. If there is a significant change in the active ingredients, method of manufacture, route of administration or dosage forms so that the safety is questionable, the so-called supplement may be classified as a new drug submission and entered and handled accordingly. If it is a relatively simple change in the formulation, labelling, method of analysis, manufacturing process or a small extension of the claims, it is considered as a supplement and handled as soon as possible. If a reply can reasonably be expected to be given within two weeks, the information is not acknowledged. If it appears that a longer time will be required for review, the receipt of the supplement is acknowledged. Supplements are not numbered but a record is kept of all correspondence in the correspondence record book. If the supplement involves the use of a new trade name, a revised card is issued. If it involves a new dosage unit, a new card is usually issued, but not always.

Since supplements may range all the way from one paragraph in a letter (e.g. notification of change of address or a change in a trade name) to a number of volumes (if they are trying to justify an extension of claims), it has been difficult to work out a standard method of handling them. We have been forced to do the best we could with the staff available.

Mr. NICHOLSON: Mr. Chairman, I would like Dr. Morrell to indicate how many new drug submissions they may have in the course of a month or so?

Dr. MORRELL: I have a table here which indicates the number for the last four or five years. This is a list of bona fide new drug submissions received, not including supplementaries. During 1958 there were 162; during 1959, 197; during 1960, 197; during 1961, 150 and during 1962, 177. Someone has made the addition and it is 883 for those years.

Mr. NICHOLSON: If a drug has been accepted in the United States, Great Britain or some other country of the world, it would still be a new drug submission in Canada, is that right?

Dr. MORRELL: Yes, sir.

Mr. NICHOLSON: Thank you.

Mr. HARLEY: I should like to ask Dr. Morrell whether he would go through the steps that take place before it becomes a new drug submission? In other words, how does the drug company inform you that they are going to put a new drug up for experimental purposes? What is the procedure followed before it reaches this stage?

Dr. MORRELL: Mr. Chairman, they notify us by a letter that usually gives some information. If I may say so, at this stage, and perhaps it is a little early, I think we need some strengthening of section C.01.307, which is the section I am referring to and which covers the restrictions on the

distribution of what we now call drugs for investigational use only. The manufacturer informs the minister of an identifying name or mark by which the drug can be recognized. That is the first thing, and that has a practical value from an enforcement standpoint. If this drug comes into the country from outside, and I can tell you that a great majority of them do, at least we can notify our inspectors at the customs that such and such a drug with the mark of such and such a kind is to be admitted if it is addressed to the proper people.

It should be labelled also, of course, "to be used by qualified investigators only."

The manufacturer prior to making the shipment must assure that any person to whom the drug is sent is a qualified investigator and has the facilities for the investigation to be conducted by him. This individual must assure the manufacturer that the drug will be solely used by him or under his direction for investigation. That information must be obtained by the manufacturer and that assurance given to him in writing so that we can see that he has received it. The manufacturer as well must keep accurate records of such distribution and the results of such investigation and make these records available for inspection by the directorate.

Those are the total regulations in force now at this moment covering drugs for investigational use prior to the submission of a new drug submitted to the minister.

Mr. HARLEY: I was wondering in respect of the qualifications of researchers whether this is something to be considered by the manufacturer and in respect of which the department has nothing to do at this stage?

Dr. MORRELL: We can argue about that, sir, but as far as the final decision is concerned, it would have to be made in court. If a manufacturer refused to accept our arguments and wished to carry on, it would be up to the magistrate or the judge to decide whether the persons to whom the manufacturer had sent the drug were really qualified investigators.

The CHAIRMAN: Dr. Morrell, have you the power under the act to initiate such action?

Dr. MORRELL: We can always initiate action for a violation of the regulations. This would in our opinion be a violation of the regulations, that is, if we disagreed with the qualifications of the investigator.

Mr. BALDWIN: Dr. Morrell, I wonder whether you would speak a little louder when you are carrying on a discussion with someone closer to you?

Dr. MORRELL: Yes. I am sorry.

Mr. VALADE: Dr. Morrell, I should like to ask you a question. When you have cause to think that a drug should be investigated further, do you advise the pharmaceutical or medical organizations in each province, or what is the procedure taken in this regard?

Dr. MORRELL: Are you referring now to a drug that is in the category of a drug for investigational use prior to marketing?

Mr. VALADE: Yes, I am referring to drugs in this category prior to marketing.

Dr. MORRELL: No. We have had very little experience and very little action in respect of drugs for purely investigational use. They are not yet the subject of new drug submissions and are simply put out for trial to a qualified investigator.

We have had some action and have taken some action in this respect, including one action not too long ago, which you may remember. In that case we notified the manufacturer that he must cease distribution for that purpose or

any other purpose. Our charge would be that he had violated a portion or all of section C.01.307, if it came to a court action. We do not make this information public. Nor do we notify anyone else as a matter of fact and have not up until the present.

Mr. VALADE: Is that true even though a new drug has been accepted and it has been discovered that there are some secondary effects which have been drawn to the attention of the directorate, or do you then advise the medical or pharmaceutical bodies in this nation?

Dr. MORRELL: No, and it is quite common, as you may know. A drug is in the market for some time with wide use on a large number of patients—it may have been millions, and by a great number of medical practitioners, many thousands—and you will discover, or someone will discover a side reaction or a contra-indication which was not revealed when the new drug submission was made. Our law requires the manufacturer to give adequate direction for use. Also the act itself in section 9(1) prohibits anyone from labelling, advertising or promoting a drug in a matter that is false, misleading or deceptive or likely to give an erroneous impression regarding its safety.

So, falling back on this law and this authority, we have required all manufacturers to give adequate directions for the use of their products, and the term “adequate directions” would certainly require them to give warnings of side effects or contra-indications. The law makes this the responsibility of the manufacturer. Our responsibility is to see that he does so. So that the manufacturer then sends out a warning, or puts it in a package circular his directions for the use and a notation of any new contra-indication or new undesirable side effect so that the doctor himself can be aware of all of the dangers that are known about the drug at any given time.

Mr. VALADE: I should like to follow up this discussion with one further question, Dr. Morrell. Have you in the past communicated by letter or advised those medical or pharmaceutical bodies or organizations representing these medical professions of any of the new developments in regard to drugs?

Dr. MORRELL: We do communicate with the pharmacists and the doctors in respect of drugs. One of the most common bits of information we give them is information about a drug put in the “prescription only sale” category. It is, of course, essential for these people to know and we issue an annual card which is sent to I think every practicing doctor and every practicing pharmacist in the country to inform them as to what drugs now may be sold retail only on doctor's order. This I think is the main communication we have had with the medical profession as a whole in the past.

In recent months we have, of course, sent several letters—I think three, but two anyway—directed to individual doctors, or at least to the medical profession, in respect of thalidomide, in one case, and other drugs in respect of which we had some information regarding possible certain associated side effects that were undesirable. We have informed them of these things.

This is a new policy in so far as the administration of the act has been concerned. We have always, up to this year at least, considered that it was the manufacturers' responsibility to inform the profession or the public, and in the case of the public, to warn on the label of any reasons for dangers in respect of the use of a drug.

Mr. ORLIKOW: Mr. Chairman, I should like to ask one question, without being critical, in respect of the thalidomide incident. Having regard to the system of holding the manufacturing company responsible for doing the investigation work in regard to drugs and in the light of what happened with the use of thalidomide, is a new policy necessary, and if so what does the department think should be adopted in this field? I raise this question because I know

that my wife had taken thalidomide over a period of time before the adverse information was available, and although it did not create difficulties in the usual sense there certainly was some kind of an effect—I will not use the term “breakdown” because I do not wish to exaggerate the situation. There was also quite a substantial lapse in time in the information getting from the companies to the doctors and then to the patients. I am aware of many cases in which this did happen and I am wondering whether, in the light of the fact that we are using so many more new and very potent drugs, a review of the procedure of leaving this up to the manufacturers is not necessary. After all, the manufacturer, and I am not being critical at the moment, is interested in selling his drugs and may not be in such a hurry, as would the department, in transmitting this information. I am wondering whether the policy followed now is sufficient unto itself, particularly in light of recent developments.

Dr. MORRELL: Mr. Chairman, certainly in the light of hindsight I may say that it probably is not sufficient. I think we are going to ask the minister for authority in the regulations to remove certain investigational drugs, or new drugs from the market and return them, at least to the new drug status, when sufficient evidence is available to indicate that something should be done.

In respect of the thalidomide incident, and in light of the knowledge we had at that time, and the information that was supplied to us,—I think you all have copies of the yellow book in respect of the information that was given to us—I feel that there was no delay in taking the action that was provided for in the Food and Drugs Act and regulations.

The CHAIRMAN: Excuse me, may I interrupt you for just a moment? This yellow book can be obtained on request. This is the information with regard to the thalidomide drug and is printed in two volumes.

Dr. MORRELL: The manufacturers met with our group on December 1 and gave us very sketchy information as to what they had heard was happening in Europe. Our reaction was to require them to give doctors this information at once. On December 5, one company sent out a letter and on December 7, the other company sent out a letter to all medical practitioners in Canada warning them that thalidomide was not to be used, because it was contra-indicated, in other words, in women of child bearing age. I think on looking back on what I know, that warning was very effective, Mr. Orlikow, but certainly hindsight is better than foresight.

We feel that some authority should be provided to require that a manufacturer recall a drug at once whenever the minister feels that there is sufficient evidence criminating a drug, until the matter is cleared up.

I know that Dr. Brien's committee has also suggested that we be given authority to do this.

Mr. VALADE: Dr. Morrell, you just mentioned the term “sufficient evidence” in respect of certain drugs. Is that not a term which involves an awful lot of discussion?

Dr. MORRELL: And how!

Mr. VALADE: I think one of the difficulties arises in regard to a decision as to what is sufficient evidence and what is not sufficient evidence.

Dr. MORRELL: I do not think you can regulate in this regard, sir. I think this has to be a matter of judgment which leans far backward.

Mr. ORLIKOW: If this involves a matter of judgment in your department, then it becomes a very simple thing because then, depending upon what happens, the public will be able to decide whether the judgment exercised was proper or not. If this involves a matter of judgment diffused between your department and the manufacturing companies, as seems to have been the case

in the past, then how can anyone establish if a mistake has been made, when it was made, where it was made and by whom it was made? It seems to me this is an important matter, Mr. Chairman. I raise this matter in respect of thalidomide not because of what has happened but because I feel that we should surely learn some lesson for the future.

The CHAIRMAN: I think that is precisely the reason this committee was set up.

Mr. ORLIKOW: Therefore, Mr. Chairman, has it not been established sufficiently that judgment must be vested with the department? This does not mean that there may never be medical action, at least from a local point of view, but I think we have to be sure that the department has to widely use its judgment when dealing with these requirements.

Mr. NICHOLSON: It is my understanding, Mr. Chairman, that that is a recommendation of the special committee.

The CHAIRMAN: That is right.

Mr. HARLEY: Mr. Chairman, I should like to ask a few questions in regard to control in Canada. We are concerned with safety, and it certainly does influence the workings of the department. Do drug or manufacturing companies have to prove or satisfy themselves not only as to the safety of a drug, but as to its effectiveness in respect of the reason it is prescribed?

Dr. MORRELL: Dr. Harley and Mr. Chairman, safety is, as you know, a very relative term. First of all, I do not think the manufacturers can prove a drug to be safe in the popular usage of that term. Safety is a relative term. In respect of drugs it is never absolute, and to ask a manufacturer to prove that his drug is safe I think would finally lead to the rejection of most drugs. So that we really look for information as to any possible hazard or danger and the evidence of such which turns up in the clinical trials and investigations of the drug during the investigational period. This is the thing we really look for primarily.

You cannot help but look for evidence also of effectiveness. I think this goes along with your scrutiny of a new drug submission in respect of so-called safety. We have been in the habit, of course, of looking for the effectiveness or evidence of effectiveness which is claimed for it by the manufacturer, or will be claimed for it when it is on the market. We have at times questioned the evidence that is supplied in this respect but it has not been a prime consideration. The prime consideration has been to get evidence as to the proper dosage, proper use, and hazards that accompany its proper use as well as the warnings and information that should go to the doctor in respect of the proper use of the drug. The doctor who is going to administer the drug cannot do so unless he knows when he should not give it and what to expect when he does give it. This is what we are really looking for. We do not ask the manufacturer to prove that his drug is effective, if you mean by "prove" that there is no doubt about it.

I have thought about this often enough. If it is effective in 20 per cent of the people you give it to, is that proof, and if it fails in the other 80 per cent of a certain group, in respect of some types of diseases, this would be a welcome addition, I think you would agree. So that we have got away from refusing to admit a drug altogether on the basis of effectiveness.

I note that the Brien committee has made the recommendation that we should require in our regulations "substantial evidence" rather than proof of the effectiveness of a drug.

Mr. HARLEY: Mr. Chairman, I should like to ask one follow-up question. Perhaps this should be answered by individuals of your staff who review these

submissions, but I was wondering whether in the study there is a placebo test, so that some idea can be gained as to whether the drug is effective or not?

Dr. MORRELL: I am afraid they do not, Doctor Harley, but if you wish details in this regard you will have to ask some of the individuals who do the reviews themselves.

The CHAIRMAN: Would you like to reserve that question until we have individuals familiar with this situation before us?

Dr. MORRELL: Doctor Pugsley and Doctor Murphy are both here, Mr. Chairman.

Mr. HARLEY: Mr. Chairman, perhaps it would be of information to some members of this committee if I explained that "placebo" means the use of a substance of no chemical action at all, involving the use of a capsule or tablet containing sugar instead of a drug in order to see if there is any reaction to it.

The CHAIRMAN: Would you like to ask any question in that regard?

Dr. MORRELL: The answer to your question is, not always.

Mr. HORNER (*Jasper-Edson*): Mr. Chairman, I should like to ask Dr. Morrell whether or not teratogenic studies are required in respect of new drug submissions particularly where the new drugs are associated with women of child bearing ages?

Dr. MORRELL: Teratogenic studies were not required prior to the development of thalidomide.

Mr. HORNER (*Jasper-Edson*): Are they required now?

Dr. MORRELL: Yes, not by regulation but by administration.

Mr. HORNER (*Jasper-Edson*): I should like to ask a supplementary question. Is there a reasonably good study in this regard which can be standardized?

Dr. MORRELL: The answer is no. I do not think that you can predict from animal tests what will happen in humans. It is true that several groups of people have been able to produce malformed rabbits in litters, the mothers of which have had thalidomide in high doses, but this has not been uniformly obtained. Other people have been unsuccessful. Several at least have been successful in this regard.

One of our projects, and I am sure a project that is being studied by a great many people not only in industry but in universities, is aimed at defining some reliable teratogenic tests which can be done on animals, embryos or tissues.

Mr. HORNER (*Jasper-Edson*): I have just one further simple question. Do manufacturing firms having large submissions of new drugs have to pay a substantial fee for these processes?

Dr. MORRELL: No, sir, they pay nothing.

Mr. BALDWIN: Mr. Chairman, I was interested in that exchange between Doctor Morrell, Doctor Orlikow and Mr. Valade. In this respect I should like to point out that I have noted from reading the regulations that regulation C.01.303 provides that no person shall sell a new drug where certain material changes are made in the conditions of use, labelling, pharmaceutical form, dosage, strength, quality or purity for manufacturing methods or facilities for control, and I wondered whether we could achieve the purpose behind this discussion by adding thereto, that if it becomes apparent to the manufacturer, or if he discovers that there are side effects or contra-indications, that did not appear in the new drug submission or in the original investigation, that he

shall automatically be prohibited from selling it. Would that be a fair and practical way of solving this problem?

Dr. MORRELL: Do you mean automatically prohibiting it forever?

Mr. BALDWIN: Oh, no, I imagine this would be subject to the regulations, and I am sure that any schedule added to the legislation must be flexible. I am just suggesting that possibly it should be required of a manufacturer which becomes aware of side effects or contra-indications to cease selling the drug because of an automatic prohibition under section C.01.303, perhaps until further direction from the department.

Dr. MORRELL: That would be possible, I am sure.

Mr. BALDWIN: I wanted to go a step further. Do you think it would be fair and practical to do so?

Dr. MORRELL: We have always considered, and I know that this is past history, perhaps, although there has been some good basis for it, that a doctor should be allowed to use a drug providing he is told of all the dangers. He knows then how to use it. As soon as a new side effect is discovered, if he is informed at once, and I mean within a week at the most, then the doctor can continue to use it.

You know that thalidomide is not the only drug that has had a series of side effects. Many well known useful and powerful drugs have been on the market, some of them for four or five years, before it was found that there are certain conditions, or certain groups of people to whom you should not give these drugs because it is dangerous to them and may kill them and, in fact, it has killed some people. As soon as this is known, or we are made aware of this, the manufacturer is required to make this information available at once to all people who are using the drug.

If it is a drug on prescription the only people who are using it legally, at least, are those people who are using it under a doctor's order. We feel that it is up to the medical profession to make their own decisions. There may be conditions in which they have to weigh the evidence. They perhaps must ask themselves: If I do not give it to the man he is going to die anyway but if I do give it there is this danger; which should I do under the circumstances? This is up to the practitioner, I think.

I suppose we could adopt a certain regulation such as you have suggested, but I do not know just how it would work. I am trying to visualize a case in which it would so work.

Mr. BALDWIN: I was not thinking so much of the medical profession. My mind was directed particularly toward the results of your discussions with the manufacturing or pharmaceutical houses which become aware of some side effects or contra-indications so that the prohibition to sell would become automatically applicable to the manufacturer.

Dr. MORRELL: It might be useful if the prohibition were to the effect that he should not sell it until he gave this information to the public and the medical profession. There might be some value in it in that way.

Mr. NICHOLSON: Doctor Morrell, did I understand you correctly to say that on December 5 and again on December 7 a notice went out to all medical practitioners in Canada in respect of thalidomide?

Dr. MORRELL: Yes. There were two companies involved, as you know.

Mr. NICHOLSON: Yes.

Dr. MORRELL: One company got their letter out on December 5 and the other company got a very similar letter out on December 7, addressed to all practitioners in Canada.

Mr. NICHOLSON: Did you see the letters in these cases?

Dr. MORRELL: I saw copies of them, yes.

Mr. NICHOLSON: Were they sent in such a form that the doctor could not help but have his attention directed to the importance of the situation?

Dr. MORRELL: I thought they were sent in a proper manner. They were sent in a long envelope, and it is true that the manufacturers' name I think was on the corner, but also in large bold faced type at the lower left hand corner was printed: "IMPORTANT DRUG WARNING". This was to call to their attention not to throw it unto the waste paper basket.

Mr. HARLEY: Apropos of that I can give Mr. Nicholson copies of it.

Mr. FAIRWEATHER: I would like copies of all of them.

Mr. VALADE: I have a question on administration. Dr. Morrell, how many persons do you have that are responsible to you in the directorate?

Dr. MORRELL: In the whole directorate? They are not all concerned with drugs.

Mr. VALADE: I mean just those concerned with drugs.

Dr. MORRELL: About 40 per cent of our staff works on drugs, and 40 per cent of 400 would be around 160.

Mr. VALADE: Did you make an estimate as to the required minimum number of persons that your directorate would need in order to comply with the necessities?

Dr. MORRELL: It would be difficult to say.

Mr. VALADE: Let us say the minimum necessities.

Dr. MORRELL: I was told a while ago, and I think it made pretty good sense, that if you ask the chief of police how many policemen he needs, he always needs more, but if you ask the mayor, he or she may not be in agreement with it.

Mr. HADASZ: I would like to ask Dr. Morrell a question. In view of his experience with this drug thalidomide, what, in his opinion, should some of the new regulations in the Food and Drugs Act be and which of them should be legislated?

Dr. MORRELL: If we start at the beginning, there should be some changes in C.01.307 which is the section related to the control and investigation of drugs. I think we should have authority to demand all information that the manufacturer has at that time. In many cases he has more information than he gives to us. I think the regulation says that all he needs to do is to give us an identifying name in respect to the drug. However, I think we ought to have the authority to say that this is not enough and that we want to know the exact composition. If the manufacturer has not got it, then we want to know something about the nature of the drug, for example, if it is an extract of glands, or else we would like to have the exact chemical composition. He can give us a great deal more information.

Secondly, I think we should have a little closer check on the selection of qualified investigators. It will be difficult I think to define in any regulation what a qualified investigator is because there is such a variety of them that I do not think it would fit a regulation, but something will have to be worked out in this respect to improve what we now have.

Thirdly, I think perhaps we should know in advance to whom the manufacturer is going to send his drug for investigation, whether it be a clinical trial or some other trial. I presume that the minister would have authority to disagree with the manufacturer's proposal if that was thought to be necessary. Certainly, during this stage of investigation the manufacturer himself should have adequate controls to standardize the drug, at least to a certain extent. This is something that we suspect is not always known.

Finally, I think we should have authority to stop a clinical trial promptly at any stage in the investigation if the minister finds that there is some danger to the public resulting from this clinical trial.

The CHAIRMAN: Could I interrupt for one second, Dr. Morrell? Do you have an example where some of these regulations that you would like to have put into effect were not put into effect because of the law? Let us take as an example the Liefcort situation in Montreal with Dr. Liefman. Were you hampered in any way in putting your mechanics into effect because of the regulations?

Dr. MORRELL: I think we were hampered to a certain extent. It revolves largely around what is a qualified investigator. I think we disagreed with Dr. Liefman's definition of the qualified investigator. This was one of the hampering features in dealing with that problem.

Mr. ORLIKOW: Did you have the authority to tell Dr. Liefman, and to make stick, what you considered were qualified investigators, failing which he could not really put his drug on the market?

Dr. MORRELL: Not really, Mr. Orlikow. I know we do not define in the regulations a qualified investigator so it becomes a question for a magistrate to decide. The actual objection we had to the so-called study that Dr. Liefman was undertaking was based on the fact that the reports from the investigators that had been returned to him were unsatisfactory under the terms of section C.01.307.

Mr. HADASZ: Mr. Chairman, could Dr. Morrell tell us what is the present status of the drug Liefcort? Has the department recommended to the government to put it on schedule H, or are they still studying this problem?

Dr. MORRELL: The present status of Liefcort is that it may not be used by anybody else but by Dr. Liefman. Dr. Liefman is now a qualified licensed medical practitioner and we feel that we cannot interfere in his practice, but no one else except Dr. Liefman is to use the product. Actually, the product itself labelled as such is not now distributed. He can, of course, prescribe to his own patients any medication or treatment that he sees fit.

Mr. HADASZ: I have one more question on the drug Liefcort. Does the director or does the department feel that the drug Liefcort is safe for humans?

Dr. MORRELL: That is a difficult question. Evidence has not been presented that it is. We felt at the time that we were examining the files of Dr. Liefman that there were no reports on the side effects which we would anticipate from our knowledge of the drug at that time. We had to analyse that drug to find out what was in it, and when we knew what was in it we felt that there was not the kind of information we could anticipate, in the report. We have read about the side reactions since, but in so far as we are aware from the information we have we could not say that it was safe or really unsafe. If we took the evidence available to us, it seemed to be safe, but we were still suspicious because of what we considered the inadequate information that was presented.

Mr. PATTERSON: Dr. Morrell, you made reference to the studies that had been carried out by Dr. Liefman in connection with that particular drug. I wonder if there is any significance in the fact that you qualified that reference and said "so-called studies".

Dr. MORRELL: I did not feel that they were proper, thorough and suitable studies to demonstrate what we expected them to demonstrate. I do not think he could have ever submitted a new drug submission that would be acceptable

on the type of results that we saw he was getting from the drug. I also felt that the studies were not thorough or real studies.

Mr. NICHOLSON: Dr. Morrell, in one or two of the regulations, in at least one, C.01.307, the expression "qualified investigator" appears. Now, it is not uncommon in legislation to see a term such as magistrate, or police officer, but when you put an adjective to determine whether a person is qualified or not, you cannot ask a judge to do it. Surely, the use of the term "qualified investigator" implies something when it appears in the regulations.

Dr. MORRELL: It is a good question. It is one that we have often debated: What is a qualified investigator for a particular job? If a drug is reputed to be useful in the treatment of cancer, for example, I think a qualified investigator dealing with the drug would be a man who is specializing perhaps in internal medicine.

He would certainly have to have the services of a pathologist. He would have to know definitely whether the tumour was malignant or whether it was not. In other words, he would have to diagnose whether it was cancer and what type of cancer it was. He would have to be a man with experience and with the facilities to measure any improvement in the condition of the patient. There are many things that he would have to have at his disposal as well as experience and knowledge to be what we would consider a qualified investigator. I would suppose if it was a question of a drug that is going to be recommended for the treatment of, let us say arthritis or rheumatism, the qualified investigator would best be one who is associated with the clinic that makes a specialty of the study of rheumatic diseases and who has all the facilities at his disposal to measure the improvement and to diagnose the illness so as to be sure he is starting out with something that is really rheumatism, to discover, what type of rheumatism, and one who has all the facilities necessary to measure improvement if there is improvement.

Mr. NICHOLSON: In view of what you said, do you not think then the definition of qualified investigator should be written either into the act or into the regulations?

Dr. MORRELL: We are going to try to do it.

Mr. NICHOLSON: Would it not be better to have it written in, in spite of the difficulties?

Dr. MORRELL: But if something came up suddenly that was not there, we would have to run to the minister to get an amendment.

Mr. NICHOLSON: Would you not agree that that would be better than having a general term of this nature?

Dr. MORRELL: It would make it easier to administer.

Mr. ORLIKOW: It seems to me that this is an extremely important point because unless the department has the authority either through the regulations or just through practices, to exert a very large extent of influence, if not control, on what is proper investigation, then it seems to me that the only other alternative, in order to get protection for the public, is to write into the law the actual controls. This is what they seem to be doing in the United States, and many competent doctors feel they are going too far. However, it does seem to me that, difficult as it may be, this is essential. One competent investigator suggested to me that people doing the initial investigation should be full-time people working in a hospital or in a research set-up, and that really part-time people, in the initial stages at least, are not either qualified or not directly enough concerned to do the adequate testing which is required. Yet, he seemed to indicate in his letter that on occasion testing has been done in companies by part-time people who just are not qualified to do the initial testing at least.

The CHAIRMAN: Can I make one suggestion?

Mr. ORLIKOW: I was just going to say, Mr. Chairman, that while I agree with Dr. Morrell and Mr. Nicholson that this may be a difficult objective to reach, it is a must if the department is really going to be able to do the job which is required.

The CHAIRMAN: Before Mr. Harley asks a question, I wonder if Dr. Morrell could relate to us the Liefcort incident? How was it brought to his attention, what happened and what did the department do about it? We might like to have a look at a specific case. Would that be difficult?

Dr. MORRELL: When was it brought to our attention? I am not sure I can tell you right now.

The CHAIRMAN: Perhaps Mr. Harley could ask his question and your assistant can think about it.

Mr. HARLEY: What I wanted to know of Dr. Morrell is whether he could give us some idea at the present time as to how much control work the food and drug directorate actually has. You mentioned that you eventually analyzed Liefcort and found its contents were such and such. I wonder if you could give the committee some actual idea of how much of that type of work you do and how much of it is strictly a quantity measurement rather than a quality measurement.

Dr. MORRELL: Mr. Chairman, the control work we do is certainly not confined to new drugs, and I presume you want me to discuss the whole of it. The number of drugs sold has been estimated from simply counting the number of items advertised or presented for sale in manufacturers' catalogues and distributors' catalogues, so you can see the basis of it. There are about 25,000 or more pharmaceutical products. These are not separate or distinct entities but are pharmaceutical products on the market. The same drug of course may be sold as a tablet, a capsule, in a solution or otherwise, but we would call all of them separate products. I have been told the Canadian pharmaceutical manufacturers association has said that they produce about 75,000 batches a year of all of their products. Then, there are those manufacturers which do not belong to the pharmaceutical manufacturers association, so I am not able to estimate how many batches there would be from them. I would estimate the number is much smaller than the one I have given. As I have said, our function is a police function, and we go to the wholesaler or manufacturer usually, but occasionally to the retail pharmacy and purchase samples of drugs. We bring them back to the laboratory and they are then analyzed. They are analyzed quantitatively.

When we do the testing of narcotics, for example for the R.C.M.P. when they want to know whether it is heroin or another narcotic, we do not have to tell them how much. However, when we analyze a solution or a capsule or a tablet, we would have to know the quantity because it is related to the strength and standard under which the drug is sold. In this case a quantitative analysis is made. There may be several ingredients contained in the drug, so of course a quantitative analysis of all of these ingredients is necessary to know whether the composition at least meets the standard.

Then, there is the second aspect which is required by the regulations: is the drug available to the patient. In other words, if the patient swallows a pill, will it eventually dissolve in his intestines or will it pass right through without solution. There are requirements for the disintegration time of various tablets. A tablet is put through this test to see if it meets the requirements. We do 2,500 to 3,000 analyses of drugs in a year. These of course are aimed at particular areas in which we have reason to be suspicious. They are not just

drawn blindly from any drug on the market because we feel it is necessary to make our efforts tell as much as possible.

Then we do some imports of drugs either in bulk or in finished form, and I cannot give you the number of samples that they take in this area.

Mr. HARLEY: I was just wondering whether you would have a rough idea of how many of those samples were up to standard and how many were sub-standard?

Dr. MORRELL: I think that two or three years ago I did make a study of the number that did not meet the requirements in every respect. Now, I want to make it clear that the requirements are spelled out mathematically. If you have a five grain tablet, let us say, you cannot have less than 95 per cent and more than 105 per cent of the five grains in the tablet. I think in that study, if I remember correctly, very close to 30 per cent did not meet the requirements in every way. A great proportion of these did not meet the requirements in a minor way. In those cases the manufacturer was warned. When it was 80 per cent or 70 per cent or some other lesser or even greater percentage, the product was removed from the market. We feel these to be the most effective means of protection. I think it is also an effective lesson for the manufacturer because he may stand to lose many thousands of dollars in his product.

Mr. RYNARD: Dr. Morrell, I was wondering how many import drugs you hold up and for how long? What would your average be?

Dr. MORRELL: I can get that information for you but I cannot answer it immediately.

Mr. RYNARD: My second question is: how many drugs do you let in on a special permit through the Food and Drugs Act?

Dr. MORRELL: We have no such thing.

Mr. RYNARD: I am going back to the time when there were drugs that were on the market in the United States, for instance, and you could get a special permission to use that drug through the Food and Drugs Act. I am thinking particularly, and you will recall this, of Thiouracil. Quite a long time elapsed here in Canada before it came in. Could you get special permission if you were satisfied that this drug on record in the United States where it was used was a good drug?

Dr. MORRELL: I presume, Dr. Rynard, you got it yourself. If a drug were directed to Dr. Rynard, there was a time when we said: "let it go". If it came to a manufacturer or to a wholesaler, then we stopped it.

Mr. RYNARD: In other words, you did not hold up any clinical work from a medical standpoint?

Mr. ORLIKOW: I would like to get back to this other question which Mr. Nicholson began. Despite the difficulties, what was the thinking of the department on this question of trying to be more specific about what would be considered qualified investigators?

Dr. MORRELL: I think we must do something about it, but I cannot give you a definition.

Mr. ORLIKOW: You are not at that stage yet.

Mr. VALADE: Is it possible to make a schedule that would place qualified investigators in a certain category without being absolute about it? This would define certain basic qualifications in certain fields of medicine.

Dr. MORRELL: Probably. I would think, Mr. Chairman, that we would consult with the Royal College of Physicians and Surgeons or the Canadian

medical association or the society of clinical investigation or some other medical group when we tried to make such a definition.

Mr. FAIRWEATHER: I am interested in what I might call the international warning system. It intrigues me that for instance in many areas of defence we have this system but is there an early warning system in this phase of our life as well?

Dr. MORRELL: There is not yet established an early warning system, but the department of national health representative at the Geneva world health organization meeting last May initiated and co-sponsored a resolution which was adopted I think by the world health organization's general assembly, which asked the world health organization to study this matter with a view to making some recommendation toward setting up such a system. I do not know what action has been taken.

Mr. MONTEITH: Mr. Chairman, is there not supposed to be a report at the next meeting of the W.H.O. in this regard? Perhaps Doctor Cameron could give us this information.

Dr. G. D. W. CAMERON (*Deputy Minister of National Health and Welfare*): Mr. Chairman, that is being considered by the executive board of W.H.O. at the present time. We are a member of the executive board. Doctor Layton is there and this matter is being dealt with.

Mr. HORNER (*Jasper-Edson*): I should like to ask Doctor Morrell as to the present status of LSD. It is, as I understand, included in schedule H, but it is available to qualified investigators, is that right?

Dr. MORRELL: That is essentially correct, yes. In the case of LSD a qualified investigator is restricted in the sense that he must be working in an institution approved by the minister.

Mr. HORNER (*Jasper-Edson*): May I just suggest that we may probably get some policy in regard to a definition of a qualified investigator by questioning some of the individuals who will be coming before us at a later date.

The CHAIRMAN: I hope the committee will keep that thought in mind.

Mr. NICHOLSON: Mr. Chairman, I should like to suggest that perhaps we give those individuals advance notice of our intention to ask for their assistance in this definition rather than taking them by surprise as was Doctor Morrell this morning.

The CHAIRMAN: I might say that anyone who it is proposed to call before this committee will receive copies of the proceedings of this committee so that they will be informed as to what is happening.

Mr. ORLIKOW: Will this be done on a regular basis, Mr. Chairman?

The CHAIRMAN: I am trying to set it up on a regular basis, but I will of necessity require a motion from this committee to print additional copies of its proceedings in view of the fact that we do not now have sufficient numbers to follow such a practice.

Mr. NICHOLSON: Doctor Morrell, during recent months, probably because of the thalidomide and LSD situations, attention has been directed toward the dangers or adverse effect of new drugs. What about the good side effects of new drugs, and I think that as an example we could refer to dramamine; is this left to the individual practitioner to report it to you or to report it to the drug manufacturers? When a drug being used for one purpose is discovered by accident to have good medicinal qualities for some entirely different purpose, how is that information brought to the attention of the professions?

Dr. MORRELL: The clinician who has discovered this new use should report it to the manufacturer, or report it to the medical journal.

Mr. NICHOLSON: Should he not report it to you?

Dr. MORRELL: No, he does not report it to us.

Mr. NICHOLSON: This involves an article in the medical journal or a report to the manufacturer?

Dr. MORRELL: Yes.

Mr. MONTEITH: Mr. Chairman, I should like to correct one statement which may have been somewhat misleading. I think Doctor Morrell mentioned that 30 per cent of drugs were found defective in some minor form or another. Actually this should be 30 per cent of a selected list of drugs in respect of which there was some general thought that something could be wrong, or there was some suspicion about the drug, is that not right?

Dr. MORRELL: Yes.

Mr. MONTEITH: It was not 30 per cent of all drugs that were found to be in this category, but 30 per cent of a selected list in respect of which there was some suspicion.

Dr. MORRELL: I would hope, Mr. Chairman, that I made that clear but apparently I did not. I said that these drugs were selected for particular reasons. We did not take the drugs off the market without having some particular suspicion or some real reason for thinking that enforcement was needed in this area. I pointed out that some of these defects were minor ones, and many were minor ones, so that the impression should not be given that 30 per cent of all drugs in Canada are defective because they are not. These were selected, as I say, with care, in order to make the most use of our manpower.

Mr. MONTEITH: It was 30 per cent of that selected group that were found defective in some minor ways?

Dr. MORRELL: Yes.

Mr. HADASZ: Mr. Chairman, I should like to direct another question to Doctor Morrell. Leaving the topic of qualified investigators, the next individuals down the line I presume are the distributors. What are the present regulations in force which are imposed on distributors and manufacturers? In other words, do they have to be licensed? Do you have to know who they are, or do they have to obtain a permit from your department? How are they allowed to carry on their business in this country?

Dr. MORRELL: Are you referring to these people in a commercial sense, Doctor Hadasz?

Mr. HADASZ: Yes.

Dr. MORRELL: They do not have to notify us in general. They are not licensed in general. Licences are required for certain groups of drugs which are listed in schedules C and D of the Food and Drugs Act. In addition, licences are required for the manufacture, importation and distribution of controlled drugs and by controlled drugs I mean drugs containing amphetamine or barbiturates, which we have in schedule G, some of the hormones, and schedule D which includes injectable antibiotics, vaccines and serums. No one may sell a drug of that type in Canada unless he has been licensed to manufacture them for sale here. This licence is granted under the Food and Drugs Act following an inspection of the manufacturers' premise, a study of the facilities, and when the manufacturer is licensed, the first batch or several batches are released only after repeated tests are carried out in departmental laboratories.

In respect to schedule G drugs, and these were ones that were implicated in the goof-ball sales in the illicit market; since September, 1961, to deal in these, to import or to export, one must have a licence under the Food and Drugs Act.

Then in respect of other types of drugs that are not specifically dealt with under the Food and Drugs Act, but are specifically dealt with under the Narcotic Control Act, all drugs that are listed in the Narcotic Control Act as narcotic drugs, must be sold and handled only after a licence is obtained.

Then there is the Proprietary or Patent Medicine Act which is also administered by the food and drug directorate, and in this case a manufacturer may ask for a registration of his formula and, if granted, he will be licensed.

Mr. HAIDASZ: Following this question up, Doctor Morrell, could Doctor Liefman be interpreted or recognized as a manufacturer of Liefcort?

Dr. MORRELL: Well, he at one time had a company called the Endocrine Research Laboratories which was for the purpose of manufacturing Liefcort, and I think he was, therefore, a manufacturer of Liefcort.

Mr. HAIDASZ: Did he have a licence from your department?

Dr. MORRELL: No, he had no licence from our department.

Mr. HAIDASZ: Liefcort contains cortisone, does it not?

Dr. MORRELL: It was manufactured as an investigational drug. It was only in the investigational stage, Doctor Haidasz. He had not come to the point where he was manufacturing it commercially.

Mr. ORLIKOW: Mr. Chairman, at the extensive hearings which were held in the United States one of the problems which became obvious was the problem in respect of drug companies naturally being interested in getting their products on the market as quickly as possible. I am wondering whether there ought not to be more control or the right of control by the department enabling it to insist that there be more thorough and detailed clinical trials before the distribution of a drug is allowed, and if Doctor Morrell thinks that necessary, would the regulations have to be changed to give that authority?

Dr. MORRELL: Mr. Chairman, I think that would be a matter of judgment as to whether adequate clinical trials had already been done. I would like to point out in this connection that most of our new drugs, and perhaps all types, do not originate in Canada but originate abroad or in the United States, and the majority of new drug submissions that we receive contain clinical trials, or the results of clinical trials that were carried out in other countries. This is a matter that was certainly referred to by the committee of the Royal College, and I think recommendations were made by Doctor Brien and his committee in respect of clinical trials which will have to be studied very carefully.

Perhaps I ought to say here that all new drug submissions that come in are not always satisfactory. I would say that more than half of them are sent back with a request for additional information; certainly more than half. I think we have in all at least 52 new drug submissions that have never been accepted, and we have a great many as a matter of fact, in respect of which the acceptance has been delayed for over a year after they were received because we have demanded, (and in this case we can demand) from the manufacturer that he supplement the information he has given us by further clinical testing in certain aspects. A great many of them are held up for this reason for up to a year.

In other words, a manufacturer who sends in a new drug submission will not always—will not often get his new drug submission accepted within a matter of a month or two.

Mr. HARLEY: Doctor Morrell, I should like to change the subject for one moment and go back to an earlier reference to a change in the Food and Drugs Act particularly in respect of controlled drugs such as barbiturates and amphetamines. I think you suggested that this change necessitated a fairly large addition in staff?

Dr. MORRELL: I believe it involved an addition of 21 individuals.

Mr. HARLEY: I wonder whether you could give us some idea of the problem that was prevalent before this legislative change and the effect of this change as it now appears?

Dr. MORRELL: Mr. Hammond is here, who administers this, and perhaps he should answer it. I can give in general terms what I know about it.

Prior to the amendment to the Food and Drugs Act in 1961 and the setting up of schedule G, these drugs were obtained only on prescription as they were already in schedule F, and could legally be bought only on a doctor's order. I presume that the temptation and the demand for them in the illicit market was sufficient to make it profitable and desirable for some people to obtain them in whatever way they could and peddle them on the street corners or in the taverns, or wherever they were sold.

This was a difficult matter for the police to handle because there was no such thing as illegal possession, and if you had a pocketful of nembutals, you did not have to tell them where you got them. I think the only offence in this regard then was to sell them if you were not selling them by prescription, and you could be charged then under the Food and Drugs Act in respect of that illegal sale.

This was not very satisfactory because there was not a very strong penalty applied in these cases. The matter grew to considerable proportions in certain cities in Canada. In view of this circumstance the Food and Drugs Act was amended to provide for schedule G.

Now before you can sell a barbiturate you have to have a licence, from either the province to practice medicine or to practice pharmacy, and as a manufacturer, importer or wholesaler you must be licensed by the Department of National Health and Welfare, in order to deal in these drugs. In addition, you must keep thorough records of what you buy and what you sell and to whom you sell, so that this makes it possible for the department with a proper staff to examine the records at the wholesale, retail and manufacturing level and to audit them and give the information to the department which can be examined to see that the manufacturers are accounting for the products they buy and the ultimate sales to the various people. I think there is no doubt about this having had a satisfactory effect in lessening, if not altogether stopping this illicit traffic in such things as barbiturates and amphetamines. Mr. Hammond will know the details of this.

The CHAIRMAN: Would you like to hear from Mr. Hammond in this regard, Doctor Harley?

Mr. HARLEY: I will leave that to the committee.

The CHAIRMAN: We will hear from Mr. Nicholson first.

Mr. NICHOLSON: In the report of the special committee of the Royal College there appears the recommendation that more testing be done by universities and by research councils in order to assist you in your work. Are you using universities in this regard now, Doctor Morrell?

Dr. MORRELL: Are you referring to clinical testing?

Mr. NICHOLSON: Yes.

Dr. MORRELL: I think the manufacturers have succeeded in getting some of the universities to take an interest in the clinical testing of new drugs.

Mr. NICHOLSON: Does your department use the facilities of universities in this regard at all for clinical testing?

Dr. MORRELL: No.

Mr. NICHOLSON: Do you use these facilities if there is a dispute of any kind?

Dr. MORRELL: We do not do clinical testing, Mr. Nicholson. This is a responsibility of the manufacturers. If we do not like the manufacturer's clinical test we tell the manufacturer or hold up his drug application which forces the manufacturer to do further work in this regard.

Mr. NICHOLSON: Have you any idea of the extent to which manufacturers and pharmacists are using the facilities of universities for clinical testing?

Dr. MORRELL: I cannot give you any figure as to the extent.

Mr. NICHOLSON: Is there any member of your staff who would have that information?

Dr. L. I. PUGSLEY (*Associate Director*): We have not any records of the extent to which this is done, but normally hospitals and hospitals attached to universities do the clinical trials in the majority of instances.

The CHAIRMAN: I would think that when the pharmaceutical association appears before us we will receive more detail in this regard.

Mr. ORLIKOW: Mr. Chairman, before we hear from Doctor Morrell's assistant, I should like to point out that I have a report before me from a committee of the Canadian medical association on pharmacy which was made I think last year or the year before, in which they suggested that the special controls on barbiturates and amphetamines, which were put in for what would appear to be good reasons, have in fact induced doctors to write prescriptions for alternatives for which in fact we know there has been less clinical testing and in respect of which we know less, and we may be worse off in some ways than we were before. I am not an expert and am just attempting to summarize what is said in this report. I know that these matters are not too easy to deal with but I am wondering in the light of our experience since these regulations were amended, whether any thought has been given as to the results.

Mr. R. C. HAMMOND (*Chief of the Narcotic Control Division*): Mr. Chairman, undoubtedly there may be some occasions where physicians may decide to use another type of drug other than a controlled drug, but there is nothing in the legislation or our controlling measures which in any way deters the physician from using these drugs for medical purposes. We have had no indication that to any extent the physicians have been concerned in this way. In fact, the evidence has been just the opposite. We have heard many remarks emanating from the profession which indicates that they welcome the control.

Mr. ORLIKOW: I was not trying to suggest the opposite, but only wanted to suggest that some of the drugs which are being used instead of barbiturates or amphetamines are not subject to the same controls. In other words, a patient does not have to get a new prescription every time. Does this situation create a problem?

Mr. HAMMOND: It is possible that some problems have been created in this regard.

Mr. HADASZ: Mr. Chairman, I should like to ask the director a question in respect of imported drugs. Are there any provisions in the act or regulations which require the food and drugs department to carry out the provisions of investigating a drug such as apply to drug manufacturers in Canada?

Dr. MORRELL: Are you speaking of new drugs or any drug?

Mr. HADASZ: I am referring to new drugs and any drugs that are imported. Are they subject to the investigations in respect of drugs manufactured in Canada?

Dr. MORRELL: There are several classes of drugs that are dealt with in different ways. If it is a new drug that has been developed in a foreign country,

and that might include the United States, very often a great deal of the investigative work is done in the foreign country. This is the country in which the manufacturer has his research staff and has his hospital and university connections, and it becomes a matter of habit and custom for him to carry out the basic work at least in that country. In many cases when a new drug submission comes in we find that little if any clinical or pharmaceutical testing has been done in Canada. We have been asking for ten years or more that such a drug be tested in Canada, certainly clinically. That is, we have asked that some testing be done here. I think that as a result of the pressure that we have exerted over the years, more and more clinical trials are being carried out in Canada.

There is nothing in the act or regulations that demands that clinical trials must be carried out in Canada.

In respect of ordinary drugs or drugs that are not classed as new drugs, and there are those that are manufactured, as I said before, under licence, and I refer now to those that are listed in schedules C and D of the act, including such drugs as have been listed in schedule C, liver extract injectable, liver extract injectable with other medication, liver extract injectable crude, liver extract injectable crude with other medication, insulin, insulin made from zinc-insulin crystals, globin insulin with zinc, insulin zinc suspension, N.P.H. insulin, isophane insulin, protamine zinc insulin, anterior pituitary extracts and radioactive isotopes and under schedule D, living vaccines for oral or parenteral use, drugs prepared from micro-organisms or viruses for parenteral use, sera and drugs analogous thereto for parenteral use, and antibiotics for parenteral use; these can only be sold in Canada by a manufacturer licenced by the department under the Food and Drugs Act to do so. This implies that before they receive a licence their premises, personnel and facilities are inspected by departmental inspectors making visits.

Mr. HADASZ: Do the inspectors visit Europe?

Dr. MORRELL: The inspector makes a visit to Europe if the manufacturer is in Europe and to the United States if it is manufactured in the United States. The inspector then makes a report which, if satisfactory, leads to the renewal of a licence. If it is a new drug that is to be licenced it must be a new drug submission. That means they must be inspected before they can get their licence. After this process is completed, then they may be licenced if the report of the facilities and all the rest of it is satisfactory and up to our standards. So that in that case I would say that the control of the foreign manufacturer is nearly equivalent to that of the domestic manufacturer. I say "nearly" because perhaps he is not quite as close and does not get as frequent inspections. The foreign manufacturer is usually inspected once a year, and certainly not less than once every two years. The local manufacturer in Canada or in the United States who has a licence is certainly inspected every year. The foreign manufacturer is inspected not less than once every two years, certainly every two years or more frequently.

In respect of the other drugs, the general pharmaceutical specialties, we do not have the authority to require, in our regulations, an inspection of the premises, and our studies must be made on the product as it reaches Canada.

Have I made myself clear?

Mr. HADASZ: Yes. I should like to ask a supplementary question. In your view, Doctor Morrell, do you not think that in the interest of Canadians and in fairness to the Canadian pharmaceutical manufacturers, all imported drugs should undergo the same review as domestic drugs?

Dr. MORRELL: Yes, essentially I think that is correct, and the Food and Drugs Act really applies equally to any product sold in Canada whatever its origin. I think that is essentially correct.

Mr. HAIDASZ: These regulations are not in force yet?

Dr. MORRELL: We do not have them as yet, no.

Mr. HAIDASZ: Do you think such regulations should be in force?

Dr. MORRELL: Yes, I think it would be very useful to have such regulations in force.

Mr. VALADE: Is it possible, Doctor Morrell, to have the same treatment, tests and conditions which apply in this country apply to foreign manufacturers of drugs?

Dr. MORRELL: Are you referring to the same inspection procedures, for example?

Mr. VALADE: Yes.

Dr. MORRELL: I think it should be possible if they want to sell their drugs in Canada. I think they should be prepared to undergo the same controls as apply in respect of our domestic manufacturers.

Mr. VALADE: My question is based on the potential possibility that in a country of say 40 million people there certainly would exist a greater possibility for clinical tests than in this country of only 18 million people with perhaps a proportionate number of medical people.

Dr. MORRELL: I suggest this depends on the country you refer to, sir. I have been in countries where there are four or five times the number of people that are in Canada and I can assure you that the controls are nowhere near as rigid as ours. However, in other countries which are smaller their tests and controls are as good as ours.

Mr. VALADE: I should like to ask a follow-up question in respect of a subject referred to earlier. I think you said before that your department licensed drugs and not manufacturers?

Dr. MORRELL: I think that is correct.

Mr. VALADE: I am wondering whether it would be advantageous in respect of the control of drugs to have your department license drug manufacturers as well as drugs. This would not remove the control or licensing of drugs themselves but would add to the control by the imposition of certain responsibilities upon manufacturers under licence, making them subject to the normal rules and regulations.

Dr. MORRELL: Are you suggesting that the manufacturer should be licensed for all of his products?

Mr. VALADE: Yes, and then that would not, as I say, cancel out the requirements for licensing drugs individually.

Dr. MORRELL: The basic legal question here could be answered by Mr. Curran.

Mr. CURRAN: On this question of licensing the manufacturer Mr. Baldwin might have something to say. Our legislation is the criminal law and it does not include the right for licensing a trade or a profession. We can license a product under particular conditions, as we have done, but the general licensing of the trade under the criminal law statute is not within our constitution.

Mr. VALADE: I thought that we licensed the medical men and by licensing them we also licensed some medical corporations or medical organizations such as the Royal College of Physicians and Surgeons in the provinces of Ontario and Quebec.

Mr. MONTEITH: That is a provincial matter.

Mr. VALADE: Yes, but would this involve only provincial legislation or could it be done under federal legislation?

Mr. CURRAN: In my view it would have to be done under provincial legislation, unless we changed the whole basic structure, in which case we would get into a trade and commerce type of clause which means the provincial movement of products. At the present time we are working under the criminal law which has universal application in Canada, and if we change the basis we change the whole structure of the control.

Mr. VALADE: I have another question. Dr. Morrell said before that his department has no legal authority to act in regard to offences against the rules set by his department. Is that correct? Have you no authority to implement or to stop the distributor of drugs or to stop a drug from being put on the market if you feel that there might be danger in it? Is it true that you can just advise but that you do not have the power to enforce this?

Dr. MORRELL: In the amendment that was passed last fall we have certainly asked the minister to put that drug on schedule H which prohibits its sale entirely.

Mr. VALADE: But only if it is on that schedule?

Dr. MORRELL: There are other applications of this. If a product violates some section of the existing regulations of the act—let us forget schedule H—then we have the power to seize it. For example, if a drug was found not to meet the standard under which it is sold, and it might be twice as strong in which case it is dangerous, we do have the power to seize these tablets or whatever they are and to have them destroyed or reworked. However, it must violate some section of the act or some regulation. It is not because I do not like it or I am afraid of it, but it must meet the requirements of the law, and what we are here to do is to enforce the law as it exists. This is what we have tried to do.

Mr. VALADE: I asked that question because I think it was not clear.

Mr. MONTEITH: I think it is fair to say, Mr. Chairman, that Dr. Morrell does put before me every once in a while a submission that a certain quantity of a certain drug, picked up under certain circumstances, which is other than as advertised, should be destroyed, and this is done.

The CHAIRMAN: Before you go ahead, Dr. Horner, I should ask whether it is in accordance with the wish of the committee that we close this meeting at 12:15.

Mr. NICHOLSON: Do we reconvene this afternoon?

The CHAIRMAN: Let us discuss this at 12:15.

Mr. HORNER (*Jasper-Edson*): I would like to clarify the legal position here. As I understood it earlier, all patent medicine manufacturers are registered or licensed.

Dr. MORRELL: That is a voluntary thing. You do not have to register a product but you may go and ask for registration.

Mr. HORNER (*Jasper-Edson*): Let me get this clear. I can go out, make a concoction and peddle it to drugstores without registering it with your department and without having a licence from you?

Dr. MORRELL: That is correct.

Mr. HORNER (*Jasper-Edson*): How can your department have any control over patent medicines or other medicines?

Dr. MORRELL: You can make this concoction you are talking about and sell it to a drugstore. As soon as we know there is such a concoction on the market we would certainly take an interest in its composition and so forth. If we are not satisfied, then we can exert certain restrictions on the sale of that product. But if you want to make that concoction and go to the department and

ask for its registration, consideration will be given to whether or not it is proper to register it under the Proprietary Patent Medicine Act.

Mr. HORNER (*Jasper-Edson*): May I ask you a further question in this regard? Do you not feel that your department and your directorate would have a better opportunity to police the drugs if all manufacturers of drugs were licensed even as to product? In other words, anyone who makes anything for medicinal purposes has to be licensed with your department. Is this unconstitutional?

Mr. CURRAN: Mr. Chairman, this is a very complicated field and I do not like to give an opinion on this. There are many ways in which controls can be exercised short of absolute licensing. Normally the licensing of a manufacturer would be a matter for provincial consideration, and I distinguish here between the agricultural statutes which proceed under a different basis. In the case that Mr. Horner has mentioned, it would have to comply with the Food and Drugs Act and all the conditions of the act including suitable conditions of manufacture and all controls which are applicable to all drugs. Therefore, it is not quite as easy as suggested for anyone to come along and put a concoction on the market. He is still subject to the Food and Drugs Act, and he is subject to all of the controls of the Food and Drugs Act including prosecution and seizure if his product violates any of the provisions of the act. Licensing by itself would not necessarily do any more than is being done at the present time under the elaborate control which the act provides. In case of proprietary patent medicines, it is a voluntary matter with the manufacturer. If he wishes to sell his product under a registration number, this is his choice. The product is then scrutinized, and if Mr. Soucy and the food and drug authority are agreeable that the product has therapeutic values, then registration can be given. However, it is a voluntary matter with the manufacturer. Otherwise he can market his product only subject to the rigid controls of the Food and Drugs Act.

Mr. BALDWIN: I have a supplementary question on that issue. I also think that such a person would be subject to the provision under the Criminal Code which deals with deceptive and improper advertising, so that if claims were made which were not correct then this person could be prosecuted under criminal law.

Mr. CURRAN: That is correct. I think it is section 3 or 7, which provides it to be an offence if a person should advertise a product for the purpose of stimulating its sale and makes claims for it that have not been subject to adequate and proper tests. The onus is on the accused to show the adequate and proper test to which a product has been subjected. It is also subject to the provisions of the Food and Drugs Act. There are therefore two statutes which would govern this situation.

Mr. VALADE: The department has some inspectors whose duties are to check into all the distributing sources and to report to your directorate on new drugs, patent medicines and things of that nature. Is that not so?

Mr. CURRAN: That is so.

Mr. HARLEY: I have two questions; the first one I will put to Dr. Morrell. Could he tell us the method by which heroin was taken off the market? This is apropos to what Mr. Valade was asking.

Dr. MORRELL: I will ask Mr. Hammond.

Mr. HAMMOND: Mr. Chairman, the story behind this is that the world health organization recommended that the use of heroin be restricted. I think it was in 1954 or 1955, I am not sure, but from that date on we did not issue any further permits or licences permitting the importation of supplies into Canada. The fact is that we still have supplies in Canada and they are not being used. With the changing events in medicine there has been a change from heroin to other analgesics.

Mr. HARLEY: If a hospital wishes to acquire some of this drug is it still available?

Mr. HAMMOND: Supplies are still available. It might be difficult to get it in an exact strength of tablet, but there are supplies available.

Mr. NICHOLSON: Before I reach the question I originally intended to ask, I should like to direct a question to Mr. Curran. I refer to a concoction of the kind Dr. Horner speaks about; in order for it to come within the definition of a patent medicine, it would have to be patented, would it not?

Mr. CURRAN: I do not wish to get into historical events, but originally the definition of a proprietary or patent medicine did contemplate a question of patent.

Mr. NICHOLSON: Yes.

Mr. CURRAN: Under the enactments of today, most of these products are not patentable and the commissioner of patents does not issue a patent in respect of these products. In the first place, you do not patent a product, you patent a process, and in this sense a patent medicine would not come within the criteria which is associated with the issuance of a patent. In other words, there is no machinery or method for making a preparation which would be patentable. As I say, this is an obsolete expression which we have not as yet stopped using.

Mr. NICHOLSON: Thank you. The other question I wish to ask is a follow-up to a question asked Dr. Morrell earlier as to whether or not there is some advantage in having a clinical evaluation carried on by an impartial body such as a university or competent medical school. Am I right that such a recommendation was mentioned by the special committee of the Royal College?

Dr. MORRELL: Yes, I think you are right, Mr. Nicholson.

Mr. NICHOLSON: Would you agree that there is some advantage in adopting such a procedure?

Dr. MORRELL: Yes, I think there would be some advantage in that regard.

Mr. NICHOLSON: Thank you.

Mr. ORLIKOW: Mr. Chairman, there has been reference to the serious problems in respect of the use of prescription drugs because of the proliferation of these drugs. These drugs would not be produced and sold if they were not being used, and they could not be used if the doctors did not prescribe them. Doctors will only prescribe them after they have received information about them. This results in a fantastic amount of advertising being sent to doctors. I wonder whether the department has given any consideration to modifying or regulating the type and amount of advertising which drug companies can use. I am told that the *Canadian Medical Association Journal* has been used in regard to this problem, but I understand that no real solution has been found.

Mr. MONTEITH: Mr. Orlikow, if I may just interject before Dr. Morrell answers your question, I should like to point out that there was an amendment to the act last autumn which actually prohibits the distribution of samples as advertisement without the practitioner writing or signing some sort of request for such samples. In regard to the actual advertising material, I think perhaps Dr. Morrell can give you an answer.

Dr. MORRELL: There is a prohibition in the act which prohibits any person from advertising a drug in a manner that is false, misleading or deceptive, or likely to create an erroneous impression regarding its value, merit or safety. We have certainly done our best to apply this section of the act in respect of advertising of drugs to the general public. We do this daily and I know that between 30,000 and 35,000 radio and T.V. commercials were examined last year in respect of foods as well as drugs.

We have the prohibitory section in the act itself, being section 3, which I think is unique in the Canadian Food and Drugs Act. It states that no person shall advertise any food, drug, cosmetic or device to the general public as a treatment, preventative or cure for any of the diseases, disorders or abnormal physical states mentioned in Schedule A, and no person shall sell any food, drug, cosmetic or device that is represented by label, or that he advertises to the general public in that way.

Schedule A contains a lot of rather serious diseases or disorders. That prohibits, whether the advertising is honest or dishonest, the advertising of them because the diseases and disorders that are mentioned are of such a nature that proper diagnosis is necessary for the public to know whether they have such a disease, and proper supervision and treatment as well as prescribing are necessary if one is to get any advantage from the drug that is taken. If the advertisement can persuade people to treat a pain in their chest or stomach with such and such a product it may be that they are treating something that they have not got, and what they have got is serious enough that when they get around to going to the doctor it is too late. I think that in itself is a very favourable section of the Food and Drugs Act, and this is certainly enforced.

When you come to a discussion regarding advertising to the professions, we have in the past been rather loath to interfere with that advertising to the medical profession. We have been rather loath to interfere in this field because we feel that these people have been trained and are experts and will themselves recognize falsehoods or puffery. In other words, they can take care of this. However, we have not entirely refrained from taking steps in the case of antibiotics which had serious reactions in children and some adults, and we require the manufacturer in his promotional material to include a carefully worded statement about these reactions.

It may be that we need to go further in regard to advertising directed to the general public, and I might say that the Canadian medical association itself has set up a code. I do not know whether at the moment it is actually in use, but we have seen this code and have commented on it for the Canadian medical association. It seems to be a reasonable code. The intent of it, of course, is that it must meet the code as set forth before it will accept advertisements for its journals.

Mr. ORLIKOW: My information is that this code is not yet in effect, but it seems to me that doctors are deluged by so much material, competent as they may be, they just do not have time to really sort it out, and it may be that the department should do some of this sorting for them. I do recognize that there are difficulties involved.

The CHAIRMAN: I may point out that Doctor John O. Godden, associate editor of the *Canadian Medical Association Journal* is one of the witnesses we propose calling. He may be able to give some information in this regard.

Mr. RYNARD: Mr. Chairman, a part of my question has been answered, but I should like to ask Doctor Morrell if it is not true that in light of the advertising that goes out by these firms to doctors, there is a great deal of useful information in respect of tests carried on in universities and other well equipped clinics of great use to doctors in evaluating the drug being advertised?

Secondly, I should like to state that any doctor can acquaint himself with a therapeutic index which lists all those drugs, in order to make a comparison of the advertisements that are received. I do not know whether there is such a therapeutic index in existence in Canada, but there certainly is one available in New York through which one can check these drugs, their uses, abuses and so forth. I just wanted to bring that point out and suggest that a great deal of useful information is contained in many of the advertisements received as a result of clinical trials of these drugs under proper supervision.

Mr. PATTERSON: Mr. Chairman, I should like to ask one question based on a reference in the minister's statement which he delivered at the beginning of this meeting regarding the discussions that are carried on between himself and the provinces in regard to the rehabilitation of thalidomide babies. I wonder whether he could just inform us as to the status of these discussions at the present time?

Mr. MONTEITH: Actually at the time we requested such discussions we found that the records in respect of deformed children, if you wish to call them that, in the provinces are very incomplete. There was really no record kept in any province concerning this matter. It was suggested that we undertake a system of reporting these cases. I realize there are difficulties involved, and I am assuming that perhaps the doctors will be able to speak to this subject. I realize, of course, that they are loath to give private medical information on occasions, but it was hoped that we could acquire better statistics concerning cases of malformed children.

Now, as far as thalidomide itself is concerned, we have had reports from British Columbia, Manitoba, Ontario, Nova Scotia, Prince Edward Island and Newfoundland. There are 31 cases reported from the provinces that I mentioned, six of them are mild, 12 are moderate and 13 severe. We have some later figures which have come in: Alberta 4, all severe, Saskatchewan 6, three severe and three mild. There has been a report from Quebec of 70 unclassified cases. There were no cases in New Brunswick and Prince Edward Island. At the time of the Federal-Provincial Conference in August, the government offered to participate in 50 per cent of any projects brought forward by the provinces for the assistance of these cases. I do not think we have any project before us as yet but I understand there are some coming forward.

Mr. PATTERSON: I have one supplementary question: does this include all malformed babies or just the thalidomide babies?

Mr. MONTEITH: Is it safe to say, Dr. Cameron, that we suspect the 70 cases from Quebec include some generally malformed babies as well as babies where thalidomide may have been involved? We do not have any real figure.

Dr. CAMERON: The Quebec investigation is still going on. These are not classified cases. These are deformed children in various degrees of deformity, and the question is whether or not they are associated with thalidomide. I understand this has not been settled. The others listed by the minister are associated with thalidomide to the best of our knowledge.

Mr. PATTERSON: Does the assistance program you have outlined, Mr. Monteith, include all deformed children?

Mr. MONTEITH: No, it includes only those definitely tied in with thalidomide. Dr. Cameron, would you like to supplement that answer?

Dr. CAMERON: I was just going to remind you that at the meeting with the provinces on August 17 two proposals were made for the department to follow up. One proposal was the establishment of a committee to look into the best methods of dealing with deformed children, with particular reference to thalidomide. That committee was established, it did its job, it made its report, and the program is now under way to acquaint orthopedic surgeons and others in this country with the most up to date methods of dealing with these children. It is recommended that three centres be established for dealing with these children.

Mr. MONTEITH: This was tabled last Friday.

The CHAIRMAN: I will get you all a copy of the report, if you wish.

Dr. CAMERON: I do not need to go into the details, as the chairman says, because it is in that report. Funds have been authorized to carry out that program.

The other recommendation was that a study be made of our methods of obtaining precise information about birth deformities in this country. This is not satisfactorily obtained at the present time because the deformities are of many different kinds, and on occasion it is not possible at birth or when birth registration is made to determine whether a child is possibly deformed internally and the degree of the deformity. If we are going to get good information, we have to have a more elaborate system. That committee has met and that study is going forward. We see it is absolutely essential, if we are going to advance our knowledge of the possible deleterious effect of drugs and other substances that surround us, that we have better knowledge of what has actually taken place. Those two committees have met and the job is under way.

The CHAIRMAN: Gentlemen, it is past 12:15. There are three things I would like to take up before we adjourn. I would like to have a motion that the chart of the food and drugs directorate be printed as an appendix to this day's minutes of proceedings and evidence. May I have that motion?

Mr. FAIRWEATHER: I so move.

Mr. HAIDASZ: There should be an explanation in regulation C.01.013 on page 77 because it is not followed by numbers up to C.01.021. In other words, there seem to be eight regulations missing on page 77.

The CHAIRMAN: I am only talking about this chart. I do not intend to have the Food and Drugs Act and regulations printed.

Mr. HORNER: I second the motion.

Motion agreed to.

The CHAIRMAN: The next problem is that we do not have enough copies of the proceedings. An additional motion is required. The motion should read that the number of printed copies of the meetings of the committee of the proceedings and evidence in English, including issue No. 1, be increased from 750 to 1,500 and that a sufficient number of copies be made available to the chairman of the committee for mailing purposes. These would be mailed merely to witnesses who may be called and not for my own use I may say.

Mr. NICHOLSON: I so move.

Mr. HARLEY: I second the motion.

Motion agreed to.

Mr. ORLIKOW: I hope you are going to make sure that not only people who are witnesses but people in university departments and so on who are directly concerned will be getting this. I do not suppose we can cover everyone.

The CHAIRMAN: I might point out one thing. I am going to try to send this list to the people we propose to call. I really do not think we can mail it to every university and every doctor in the country. I think it would not be proper. They can get in touch with the Queen's Printer and get it at their own volition.

Mr. ORLIKOW: Will that be mailed from day to day?

The CHAIRMAN: We are trying to arrange it.

The other motion is that permission be sought from the house for the committee to meet in Montreal, Quebec on Thursday, Friday and possibly Saturday, February 14, 15 and possibly 16, 1963, and that the clerk of the committee accompany the committee to Montreal. This is only to get permission from the house so that we can make our trip.

Mr. ORLIKOW: I was not here at the last meeting. Is the trip for the purpose of inspection?

The CHAIRMAN: Yes, the Hotel Dieu hospital, clinical research division, Ayerst, McKenna and Harrison Limited, and Charles E. Frosst and Company in Montreal.

Mr. NICHOLSON: You were going to give consideration and advice today on whether or not we should visit the Ciba premises.

The CHAIRMAN: I might say, with regard to this motion, that the people I called long distance felt that two and a half days would be squeezing it to see that, and if an additional meeting or trip was contemplated it should be done at the time. Can we have a motion?

Mr. PATTERSON: Was that not covered at the last meeting?

The CHAIRMAN: I have to have an official motion so that I can go before the house and ask permission to do this.

Mr. ORLIKOW: I so move.

Mr. HORNER (*Jasper-Edson*): I second the motion.

Motion agreed to.

Mr. NICHOLSON: Speaking of the list of witnesses to be called, I may say that the head of the neurological research division of the university of British Columbia has suggested that this committee give consideration to calling Dr. George Ling, assistant professor of the department of pharmacology. He is not only a brilliant scientist but he has spent years in the drug industry, both in research and in sales. I think he would be a worthwhile witness.

The CHAIRMAN: I will get this down.

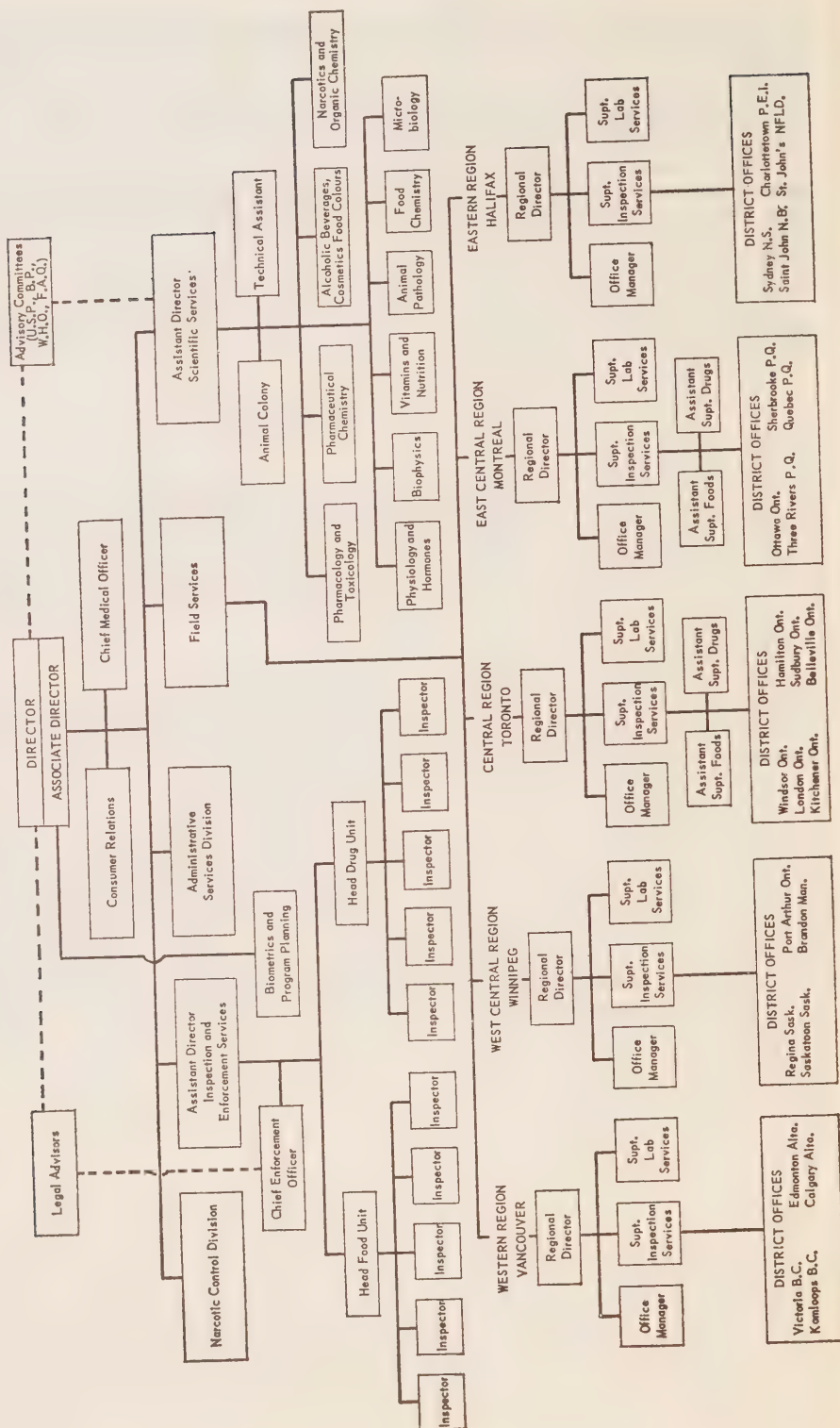
The other point was about the future sittings. My own view was that we should not sit this afternoon. We should sit on Thursday at 9.30 a.m. to continue our discussion with the minister and the directorate officials. Is that in accordance with the wishes of the committee?

Mr. HARLEY: Did you call other witnesses for Thursday?

The CHAIRMAN: No. Is that agreed? The other thing is that the special committee on drugs of the Royal College of Physicians and Surgeons headed by Dr. Brien, will be available at 9.30 next Tuesday morning and I think he will have the other two members of this committee with him. These people are very busy men and I propose that that day we sit from 9.30 a.m. to 12.30 and after Orders of the Day until 5.30 so that we might try to get this report cleaned up in that one day so that these men can go back to their universities.

Any other business? The meeting is adjourned until 9.30 Thursday morning.

THE FOOD AND DRUG DIRECTORATE



ORDER OF REFERENCE

HOUSE OF COMMONS
TUESDAY, January 29, 1963.

Ordered,—That the name of Mr. Howard be substituted for that of Mr. Orlikow on the Special Committee on Food and Drugs.

Attest.

LÉON-J. RAYMOND,
Clerk of the House.

MINUTES OF PROCEEDINGS

THURSDAY, January 31, 1963.

(4)

The Special Committee on Food and Drugs met at 9.50 a.m. this day. The Chairman, Mr. R. M. T. McDonald, presided.

Members present: Messrs. Baldwin, Haidasz, Harley, Howard, Horner (Jasper-Edson), McDonald (Hamilton South), Mitchell, Nicholson, and Rynard. (9).

In attendance: From the Department of National Health and Welfare: Dr. G. D. W. Cameron, Deputy Minister of National Health; Mr. R. E. Curran, Legal Adviser; Mr. Eric Preston, Chief Personnel Services; Mr. D. H. Dunsmuir, Executive Assistant to the Minister: from the Food and Drug Directorate: Dr. C. A. Morrell, Director; Dr. L. I. Pugsley, Associate Director; Dr. R. A. Chapman, Assistant Director in Charge of Scientific Services; Dr. J. B. Murphy, Chief Medical Officer; Mr. M. G. Allmark, Chief of the Pharmacology and Toxicology Section; Mr. Paul Soucy, Chief of the Proprietary or Patent Medicines Section; and Mr. R. C. Hammond, Chief of the Narcotic Control Division.

A quorum being present, the Chairman welcomed Mr. Howard, a new member of the Committee.

With permission of the Committee, Dr. Morrell read a short statement being a summary of the action taken by the Department about the drug Liefcort; this information was asked for at a previous meeting. He was questioned thereon and was assisted by Dr. Murphy.

Dr. Morrell was also questioned about the application of the Rules of the Food and Drugs Act to the vitamin preparations, and about commercial advertising of drugs.

At 10.45 a.m., the Committee agreed to take a short recess.

At 11 o'clock the Committee reconvened.

Mr. Hammond, Dr. Cameron and Dr. Morrell answered questions about controlled drugs and narcotics.

Following a request made by members at a previous meeting, Mr. Curran explained the federal-provincial responsibility with regard to licensing. He and Dr. Morrell answered questions thereon.

Before adjournment, the Chairman announced that the members of the Special Committee of the Royal College of Physicians and Surgeons will appear before the Committee on Tuesday next, February 5, at 9.30 a.m., and that a meeting has been arranged for the Canadian Pharmaceutical Manufacturers Association to appear on March 5th.

It was agreed to ask the Associations who wish to be heard to supply the Committee with copies of their briefs beforehand, so that the Members have a more comprehensive hearing.

At 11.30 a.m. the Committee adjourned to Tuesday, February 5, at 9.30 a.m.

Gabrielle Savard,
Clerk of the Committee.

EVIDENCE

THURSDAY, January 31, 1963

The CHAIRMAN: I see a quorum. Gentlemen, I would like to welcome Mr. Frank Howard to our committee. He is replacing Mr. Orlikow today.

At the last meeting there were some questions asked and I believe Dr. Morrell would like to make a statement in respect of these questions. The first question, I believe that I posed, was followed up by Dr. Horner and Dr. Haidasz. This was with regard to Liefcort and Dr. Liefmann. I wonder if Dr. Morrell could bring us up to date on the procedures the department took in respect of this drug. He might give us a brief resume.

Dr. C. A. MORRELL (*Chief of Food and Drug Directorate*): Mr. Chairman, the attention of the food and drug inspectors was drawn to Liefcort through a popular article in a newspaper, in which it was indicated that a new treatment for arthritis had been discovered. The food and drug inspectors immediately visited Dr. Robert Liefmann and explained to him the requirements of the Food and Drugs Act in respect of the introduction of a new drug for clinical trials. Dr. Liefmann was advised in writing that he must comply with the requirements of section C.01.307 of the food and drug regulations. Dr. Liefmann agreed to do so.

Since some time is necessary to obtain the results of clinical trials in such a case, Dr. Liefmann was allowed several weeks in which to obtain these reports from his qualified investigators. After this period of time had elapsed, our inspectors returned to Dr. Liefmann to assure themselves that he was, in fact, carrying out all the requirements of section C.01.307. On the occasion of this second visit, it was observed that not all of the requirements had been adhered to and once more, Dr. Liefmann was advised of what he would be expected to do. He again promised to adhere to the provisions of the regulations.

At this time it was also learned that Dr. Liefmann had not given us the facts about the true nature of the product and it was necessary for us to analyze it in our own laboratories. Although Dr. Liefmann felt that the reports from the investigators he selected were adequate, we could not agree with him that they would be suitable for inclusion in a new drug submission which, of course, is the purpose of clinical trials on new drugs that are still in the investigational phase. Our inspection of his records of distribution and of the reports received, showed them to be quite incomplete in complying with the requirements of section C.01.307.

Several subsequent visits at short intervals by our inspectors indicated no improvement from our point of view and finally, a letter was written to Dr. Liefmann demanding that no further distribution of the drug to investigators be made.

Dr. Liefmann agreed to cease further distribution and informed us that Endocrine Research Laboratories had ceased to exist. Subsequent investigations have indicated that Dr. Liefmann is confining his activities to his own private practice and no products labelled as Liefcort are being given to his patients.

That is the summary of action taken by the department in respect of the drug.

The CHAIRMAN: Are there any questions on that?

Mr. HARLEY: I was going to ask Dr. Morrell whether the United States food and drug directorate was involved in this. I understand these products are being given to people from the United States and taken over the border.

Dr. MORRELL: The United States Food and Drug Administration is certainly interested because of the fact that the Americans are importing it for use; but I must point out that he had given no indication to the United States Food and Drug Administration that he was putting out a drug for clinical trial in the United States. In fact, he was not officially doing so, and from that fact alone the importation of Liefcort into the United States would have been in violation of the Food, Drug and Cosmetic Act of the United States. So, of course, they were interested from the administrative standpoint.

Mr. HARLEY: I understand that the drug was actually taken in by a patient who would return to the United States. Does this mean in law that he is not really exporting it by giving it to someone in Canada who takes it over himself?

Dr. MORRELL: I believe this did happen; that they came to his office in Montreal and took a lot of the drug back. I believe this happened frequently.

Mr. HADASZ: Did I understand your last two sentences correctly; that he may give this drug to his patients?

Dr. MORRELL: In so far as the Food and Drugs Act is concerned, I think he may. I do not know of any authority in the Food and Drugs Act to tell him he may not.

Mr. HADASZ: Did the department analyse the constituents of the drug Liefcort, and what were the results of the analysis?

Dr. MORRELL: I said it was analysed.

Mr. HADASZ: By whom?

Dr. MORRELL: By our laboratory. I think Dr. Stephenson in the food and drug laboratory found it to contain estradiol, methyltestosterone and prednisone.

Mr. HADASZ: From the reports we have read in the newspapers, I believe that the laboratory in New York tested the doses of these three drugs in Liefcort and found them to be above the therapeutic dose.

Dr. MORRELL: I think I have seen this report to which you refer, and that dose of estradiol was ten times the usual dose. It is difficult to say it is never given by a doctor in the dose that is in Liefcort, but the dose of estradiol at least is higher than the usual dose suggested.

Mr. HADASZ: Were these same results obtained by your laboratory?

Dr. MORRELL: Essentially. We got somewhat more than 9 times and they got ten times the usual dose. There was no substantial difference in the results that we heard of eventually from the Food and Drug Administration in the United States and our own.

Mr. HADASZ: Is not the Food and Drug Directorate also interested in the several levels of doses of these drugs?

Dr. MORRELL: Yes, in a way, Dr. Hadasz. This was a drug out for investigational trials. As you know, having read C. 01.307, at the moment we do not even have the authority to demand the composition. We found this out by our own analysis. I would say that when a drug is out for investigational use it is a different matter from when the drug is on the market in regular commercial or medical use. It could be that the dose of a drug in investigational use would be higher than usual for a certain condition for which some doctor might think it would be useful.

Mr. HADASZ: But the dose of estradiol has already been established for therapeutic purposes; it is not a new drug. The safe levels of the hormone

estradiol have already been established. I do not think he had an excuse in saying that in so far as the dosage of estradiol was concerned he was only experimenting clinically. This has already been established.

Dr. MORRELL: I did not know there was one dose and one dose only used for estradiol.

The CHAIRMAN: Could I have one clarification. Were the researchers or clinical investigators in your view clinical investigators in this instance or was this merely a testimonial?

Dr. MORRELL: The reports we saw were not satisfactory. Many of them were in the nature of testimonials.

Mr. BALDWIN: In respect to Liefcort, as I understand it, it is now on schedule H. Am I correct in that?

Dr. MORRELL: Liefcort is not schedule H. There are two drugs on schedule H, thalidomide and LSD.

Mr. HADASZ: Does not Dr. Morrell think that liefcort should be put on schedule H owing to the fact that a dose of estradiol is ten times the therapeutic dose of that hormone.

Dr. MORRELL: Liefcort is not now being distributed to anyone.

Mr. HADASZ: Neither is thalidomide nor LSD.

Dr. MORRELL: No, because they are all on schedule H and liefcort is not being distributed because we have told Dr. Liefmann he must not do it.

Mr. HADASZ: And yet he is allowed to use it on his patients when you do not allow thalidomide to be used on certain patients.

Dr. MORRELL: Well, we feel that a doctor should be allowed to prescribe in general what he thinks fit because this is the practice of medicine.

Mr. HADASZ: There are some doctors who believe they should prescribe thalidomide to some male patients suffering from insomnia.

Dr. MORRELL: Yes.

Mr. HADASZ: Why do you allow liefcort to be given at the discretion of a doctor and not thalidomide.

Dr. MORRELL: I think thalidomide is a special case.

Mr. HADASZ: Well, I still think you are in a way, as I say, not following your line of judgment in the principle you have set forth, seeing that in the case of thalidomide there are certain useful effects and certain harmful effects and yet you abandon it completely, even at the discretion of clinical researchers.

Dr. MORRELL: Well, it was banned by an act of parliament.

Mr. HADASZ: Yes. But, as I say, the minister, upon your advice, can put liefcort on schedule H; it does not have to go to parliament. It is this schedule H that was legislated but not the individual drugs on schedule H.

Dr. MORRELL: We have investigated the distribution of liefcort since the order was given to Dr. Liefmann and we certainly have found no evidence that it is going anywhere else but to perhaps his own patients, and that I do not know for certain.

Mr. HADASZ: I think that if you have adopted the solicitude to protect Canadian patients from thalidomide, if liefcort is a dangerous drug you should protect all Canadian patients from liefcort.

The CHAIRMAN: For clarification—as you know, I am not a practitioner—does the food and drug directorate investigate many drugs other than liefcort a year and do they direct the medical profession how to use these drugs?

Dr. MORRELL: I think the introduction of section 14(a) of Bill C-3 was the first time that the Food and Drugs Act was used either directly or indirectly to tell physicians what they may not prescribe.

Mr. HARLEY: Mr. Chairman, I wanted to have a clarification from Dr. Morrell on this one matter. I think he partially has answered the question already. If Dr. Liefmann is able to prescribe the drug, liefcort, to his own patients I assume then he must be continuing to manufacture it himself. In other words, he obtains the ingredients somewhere but combines them himself.

Dr. MORRELL: Yes. As you know, there are three ingredients, estradiol, methyltestosterone and prednisone and he could give his patients the same amount of them separately as he has combined them in this mixture.

Mr. HARLEY: I agree.

Dr. MORRELL: He is mixing them.

Mr. HARLEY: No doubt he buys these things in a more or less raw state from one of the other drug firms and combines them in the proportion he sees fit.

Dr. MORRELL: Yes, and he might even double the dose of estradiol, as far as I know, and I do not think I could prevent him from prescribing any dose of estradiol he saw fit to prescribe.

Mr. RYNARD: Dr. Morrell, did not the status of Dr. Liefmann change? Is he not a licensed physician now; whereas he was not when you first took action?

Dr. MORRELL: He is a licensed physician now, and, as far as I know—and I am sure I am right—at that time he did not have a licence.

Mr. RYNARD: Yes, I do think there is a distinction there. The number two thing is: did he see these patients repeatedly so he could change the dosage, because there is a difference in dosage at the start; you may give a maximum dosage and then bring the patient down to a therapeutic level. I do not think that has been brought out. There is a difference in dosage.

Dr. MORRELL: Yes.

Mr. RYNARD: I wondered whether he had seen these patients.

Dr. MORRELL: We saw a few record cards and some of his patients he saw more than once.

Mr. RYNARD: Did he change the dosage?

Dr. MORRELL: I did not see the cards myself; the inspectors saw the record cards and I do not know whether or not Dr. Liefmann changed the dosage.

Mr. RYNARD: In other words, the drugs that he was combining he might have been buying from a reputable manufacturer and he may have been giving those drugs which every physician uses in his practice. Then I think the question comes up, if he did keep records, did he change the dosage and treat his patients in accordance with therapeutic law. Certainly if he is a registered physician now there has been quite a difference in the picture because previously he was not.

Dr. MORRELL: He was a graduate in medicine, you understand.

Mr. RYNARD: But he was not licensed.

Dr. MORRELL: No.

Mr. RYNARD: Is that correct?

Dr. MORRELL: As far as I know that is correct.

Mr. HORNER (*Jasper-Edson*): I think the main thing is that, in fact, this is not a new drug but rather a combination of old drugs.

Dr. MORRELL: Yes and I am not sure it is a brand new combination; it is certainly a combination of well known drugs.

Mr. HOWARD: Is it true that, as in the case of liefcort, there are combinations of other drugs that go into making up thalidomide and lysergic acid?

Dr. MORRELL: No sir; these are definite chemical entities.

Mr. HOWARD: So it would not be possible for a physician to compound them; he would then have thalidomide and that is prohibited.

Dr. MORRELL: It is not easy to manufacture them. I do not think a doctor would manufacture them in his own office.

Mr. HOWARD: But in any event, if he did, it is prohibited.

Dr. MORRELL: Yes.

Mr. MITCHELL: I would like to direct a question to Dr. Morrell. The withdrawal of liefcort, or the suggestion that the doctor withdraw it would be for two reasons, I presume; in other words, (1) it was dangerous in respect of the dosage and (2) it had no medical use or had no curative action with respect to what he was using it for, and it would be for one of those two reasons that it would be removed.

Dr. MORRELL: No; we enforce the law and our enforcement action has to be taken on a breach of that law in some way or other. There is a section of the regulations, C.01.307, which governs the introduction of drugs for investigational uses. When we went to Dr. Liefmann's office, talked to him and saw his records, we found that he was not complying with some of the requirements of this section of the regulations. We asked him to do so and told him how he might do it. He agreed to do so. Subsequent visits indicated that he was not doing so and because he was then violating that section we told him he must no longer distribute the drug to anybody else for any purpose.

Mr. MITCHELL: Then, for the committee's edification, what was he violating insofar as that section is concerned.

Dr. MORRELL: The section requires that when he distributes his drug, it must be labelled for investigational use only—and I think there was a period in which he did not do that. He eventually corrected that. He was supposed to distribute it only to qualified investigators for the clinical trials. We questioned his qualified investigators. Finally he is required to collect investigators reports—that is detailed reports—of the investigation that these people had carried out. When we looked at these reports they were very unsatisfactory. They were either missing in some cases or they were far from complete in other cases. They were virtually only testimonials rather than detailed reports of a clinical trial. This was again pointed out to him and he said he would take the proper action. But, he did not, and then we told him he must not any longer distribute the drug.

Mr. MITCHELL: Then you were qualifying the active product yourself as being dangerous.

Dr. MORRELL: No.

Mr. MITCHELL: You were merely asking him to abide by the regulations which had nothing to do with the efficacy of the product according to the three ingredients in it.

Dr. MORRELL: No. Had a new drug submission eventually been made we would, of course, have looked very carefully at the evidence for hazards that might have developed. There is one thing I might go back and say; we did not see any reports of side effects in these reports from the clinical trials and looking at the composition of the drug, as we eventually knew it, we would expect some, and we did not see any. But had a new drug submission been made to us we would have looked for this and we would have also looked at the evidence he had for effectiveness. But none was ever made.

Mr. MITCHELL: No. You have not gone that far.

Dr. MORRELL: No.

Mr. MITCHELL: And even if he lived up to these regulations, which you say he did, and then the product was controlled to your satisfaction, you would or would not have any authority, shall I say, to qualify or investigate whether this was in use or not.

Dr. MORRELL: Well, if he makes claims for it we consider him as a manufacturer in this instance and not as a practicing physician. And if he made any claims that it was of value in the treatment of rheumatoid arthritis or arthritis we would have been very much interested and concerned with the information he supplied in his new drug submission to support this claim.

Mr. HARLEY: Mr. Chairman, I have a few more questions to ask Dr. Morrell on this matter. Is there any existing legislation through which your department can impose a time limit on an individual in respect of the investigational use of drugs? Is there a time within which an individual must submit a new drug submission?

My second point arises from an assumption on my part in respect of what you said. If Doctor Liefman came to the department and said he wanted again to do some investigational work on a drug, provided that he followed the regulations of your department, although he had perhaps just changed the dosage slightly, could he again distribute this drug to his patient?

Dr. MORRELL: There is certainly nothing in the law which states that he cannot.

As to the time limit, there is no time limit set down, and the time does vary greatly from a matter of a year to many years. The time in respect of LSD was many years.

Mr. HARLEY: Is there any time limit in respect of an interim report that a company would have to submit to you?

Dr. MORRELL: No, there is not.

Mr. HARLEY: Do you think it would be of assistance if there was a time limit in the regulations in respect of a drug being investigated, requiring a company to report every six months on its progress?

Dr. MORRELL: Such a regulation might be of assistance. We now have the authority to look at the company's records which the company has collected in respect of clinical trials and investigations. At the present time we can look at those records at any reasonable time, so that if we are suspicious of something we can see what has been going on or accomplished at any particular time.

Mr. HOWARD: Doctor Morrell, is Liefcort what one might call, as they are generally referred to, a combination drug which contains other drugs generally used for different purposes?

Dr. MORRELL: Liefcort is a brand name of a mixture of drugs. It is a mixture of three drugs, as far as we are aware, in some kind of medium or vehicle. It is a combined drug. The three drugs are well known.

Mr. HOWARD: Yes, but are they administered normally for different maladies?

Dr. MORRELL: Yes, they are individually administered for different things.

Mr. HOWARD: Undoubtedly you have seen the series of articles which have appeared in *Macleans* magazine this year with respect to the drug and so on. One of the articles dealt with this question of combination drugs, or the combining of drugs used for different purposes, resulting in a new therapeutic value. Do you now have within the food and drug directorate any facilities for testing the toxicity or efficacy of these drugs?

Dr. MORRELL: The efficacy, if I might refer to it first, can really only be obtained by clinical trials. We have no facilities whatsoever to carry out clinical trials.

Toxicity at times can be measured up to a certain point at least by tests on animals. We do have some facilities for testing toxicity on animals of various species. I want to point out that there are hundreds of new drug submissions sent to us every year. There are dozens of other materials such as food additives, pesticides and so on, submitted to us every year for some kind of examination or review. If we tested them all we would have to have a very, very large staff and a large colony of animals. Therefore, we feel, and I still think it is right, that the responsibility for testing the drug for these hazards and value rests with the manufacturer who is going to sell it. Our responsibility is to see that the manufacturer obeys the law when he makes his tests and puts his drug on the market.

Mr. HOWARD: Perhaps this is hypothetical, but suppose a manufacturer makes the required tests but the side effects or toxic effects which may result from a newly developed drug do not show up for some period of time, such as I gather was the case with thalidomide and other drugs which had a variety of side effects; and if you were to come to the conclusion that the toxic effects were extremely disastrous, what steps could you take to have the drug withdrawn from the market? Could you put it on schedule H?

Dr. MORRELL: At the present time we can put such a drug on schedule H.

Mr. HOWARD: Prior to now you could not do that?

Dr. MORRELL: No.

Mr. HOWARD: Do you have any authority to assess the efficacy of drugs as to whether one is better for some particular ailment than another, even though it is claimed to be?

Dr. MORRELL: We have an indirect authority that pertains to the labelling of drugs. One cannot label or advertise a drug falsely or in a manner that is likely to give an erroneous impression regarding its value. However, we have no other authority in respect of efficacy. I think that the efficacy of a drug can only be determined after very wide usage for a considerable time, I mean on millions of patients perhaps over a period of years by a large number of practitioners. So many drugs start out with a bang and somehow or other peter out. It is not possible to tell within a few months or within a year whether a drug is really going to be valuable in the long run. Then again its efficacy is a relative thing. It has to be determined whether it is effective on every patient to a certain degree or effective only on a few patients. This is all very difficult and I do not think that a government department should be the authority or the agency which says that this drug is of value and that drug is not of value. This can only be determined by the medical profession itself after a long usage of that drug.

Mr. HOWARD: There has been a tremendous increase, since the last few years anyhow, in the number of drugs that come on the market. Is this true? Do you anticipate that there will be a greater use made of schedule H in the Food and Drugs Act as a result of this?

Dr. MORRELL: It is always there, Mr. Howard, if it is needed. Personally I would think that schedule H should be used very sparingly.

Mr. HADASZ: Mr. Chairman, I am still not completely clear why the food and drugs directorate does not prohibit Dr. Liefmann from using liefcort on his patients.

Dr. MORRELL: The only answer I can give, unless someone else can think of another answer, is that he is not violating any section of the Food and Drugs Act and regulations. Unless we are going to get into some regulation that tells a doctor what he can prescribe, and in fact that regulates medical practice, I do not see how we can stop it. That is the only answer I can give you.

Mr. HADASZ: But you have already stated that the dose of estradiol is ten times above the therapeutic dose.

Dr. MORRELL: No, the usual dose.

Mr. HADASZ: Is that not unsafe?

Dr. MORRELL: Perhaps Dr. Murphy could answer that. He is a medical doctor.

Dr. J. B. MURPHY (*Chief Medical Officer, Food and Drug Directorate*): Well, Mr. Chairman, first of all I should point out that if a physician were treating a cancer patient with estradiol, he might well have to use doses of that drug well in excess of a recommended dose for, say, the treatment of dysmenorrhea, or something like this. With liefcort, all Dr. Liefmann did was to mix three drugs together. These were for the purpose of treating primarily rheumatoid arthritis. It was an experimental mixture and Dr. Liefmann deemed it advisable to have the drug mixtures in these particular doses. The fact that estradiol was ten times the usual recommended dose was known by Dr. Liefmann and in his judgment, I presume, he felt this dosage was necessary.

Mr. HADASZ: My question was whether in the judgement of the food and drugs directorate a dose ten times the therapeutic dose is acceptable in the treatment of rheumatoid arthritis.

Dr. MURPHY: This is a question which could only be answered after the patient has been treated.

Mr. HADASZ: There have been patients and there has been evidence of serious side effects.

Dr. MURPHY: But we also have evidence, on the basis of reports we have received both from physicians and testimonials from patients, that the drug combination was effective.

Mr. HADASZ: For what?

Dr. MURPHY: For the treatment of their arthritis.

Mr. HADASZ: But you have other evidence also that this drug has caused serious side effects.

Dr. MURPHY: We have heard of cases in which the use of the drug has caused some serious side effects to the patient.

Mr. HADASZ: You think this situation should continue?

Dr. MURPHY: I will only point out to you that many other drugs can cause serious side effects if misused either by the patient or if they are not given properly by the physician.

Dr. MORRELL: Mr. Chairman, the situation is not continuing in the sense that liefcort is being used by other physicians or that it is being distributed or manufactured in a commercial way. We are interested, under the Food and Drugs Act, in the commercial practice not in medical practice itself. If estradiol, which seems to be the ingredient of liefcort that is being spoken of just now, were given separately by a doctor in ten times the usual recommended therapeutic dose, I do not believe we would say that that doctor could not use estradiol in the future. It seems to me that this situation is analogous to that, Dr. Hadasz.

Mr. HADASZ: According to regulation C.01.307 we are also involved in the safety and dosage of drugs, and, as you said, liefcort or estradiol given in ten times the therapeutic dose is unsafe, therefore you are involved in safety.

Dr. MORRELL: I have not said that, Dr. Hadasz. It is possible that in some cases it would be quite safe. I have no evidence that on the whole you must stick only to the usual recommended dose of estradiol. I would think it should

be a doctor's judgement or a doctor's opinion as to what dose of estradiol he should give to a particular patient rather than have me tell him what dose he should give to a patient.

Mr. HADASZ: The whole problem is this, that you have ruled that thalidomide in certain cases is unsafe and therefore it must be banned, and yet liefcort is unsafe in certain cases and is not banned, it is not put on schedule H.

Dr. MORRELL: Liefcort in a sense is banned in that it is not commercially available. It is not now available for clinical trial; it is available only to Dr. Liefmann in his own practice. He buys the ingredients, he mixes them up—in what proportion at the moment I do not know—but there are many doctors in Canada and what they are giving to their patients I do not really know and I suppose it is not my business.

Mr. HARLEY: I have a question which does not deal with liefcort.

The CHAIRMAN: Any other questions on liefcort?

Mr. RYNARD: Dr. Morrell, I wanted to clarify this point. Is not this situation altogether different? Is Dr. Liefmann not now under disciplinary action of the Royal College of Physicians and Surgeons of the province of Quebec so that if he is doing anything wrong they will look after it?

Dr. MORRELL: There is such a thing as malpractice.

Mr. RYNARD: Therefore, this does not enter into the picture at all?

The second point is that therapeutic doses differ according to the condition the doctor is treating. There is no therapeutic level dose because it depends on the condition you treat.

Mr. BALDWIN: To go back to the point made by Dr. Hadasz, section C.01.307 applies to manufacturing and selling, but then, the response to Dr. Rynard indicates that this is in a different category, this is not a case of selling, to which C.01.307 applies.

Dr. MORRELL: That was the point I tried to make, sir.

Mr. HARLEY: Is everyone ready to leave the question of liefcort?

Mr. HOWARD: I have an indirect question.

Mr. HARLEY: I wonder if you could give us some idea of whether the rules of the food and drug directorate actually apply, and if so, how they apply to different vitamin preparations which are on the market in very profuse numbers? I am thinking particularly of the drugs which have come on the market in very large quantities under very strong tactics, such as "nutro-bio" and that type of thing.

Dr. MORRELL: You mean what can we do about this?

Mr. HARLEY: Yes. How do the rules of the food and drug directorate apply to food additives and diet additives?

Dr. MORRELL: There is a section in the food and drug regulations which deals with vitamins only—as you probably know—and this applies. There is a list of vitamins given which people may represent as being vitamins and the amounts which are permitted in various preparations are listed; if you are going to sell a preparation as a vitamin supplement, you may not have in the vitamin preparation more than a given amount of each vitamin, and actually that is all listed.

If you are going to sell a vitamin preparation for therapeutic use, in the treatment of a deficiency disease, you must go higher in your vitamin content in the preparation, and it is lawful, but you must label it for therapeutic use only. You do not advertise it to the general public at all. This is also listed. In other words, there is a level beyond which the product—if it says that it contains vitamins exceeding that level—must be labelled for therapeutic use only and not advertised to the general public.

The claims which can be made for each of the vitamins are specified in these regulations.

Now, in respect of enforcement measures we pick up samples; usually they are picked up as samples from products on the market, and we analyze them for their vitamin content. We also look at the label to see if it meets the requirements of the regulations, and we would look at the claims made, whether they be in advertising or on the label, to see that they do not exceed those laid down in the regulations.

These requirements apply to all vitamin products sold in Canada whether by unusual means—such as you mentioned—or sold in pharmacies. We try to apply them across the board. Does that answer your question?

Mr. MITCHELL: The date is necessary on certain vitamins, is that correct?

Dr. MORRELL: We have an indirect date on the vitamins, in as much as the batch number indicates the date of manufacture according to a code which gives our inspector, the pharmacist and the manufacturer, of course, an indication of the date on which it was made. Therefore those who are selling and dealing with it—and our own people—are able to tell when the product has been on the market for perhaps too long.

Mr. HARLEY: I would like to return and ask a question in reference to what we were talking about a few minutes ago. It was my understanding that the drug I mentioned, and similar ones like it, would actually come within the ruling of the food and drug directorate because they were labelled as something else, and not vitamins.

Dr. MORRELL: That certainly came within the purview of the Food and Drugs Act, and of the authority of the regulations; and we did go further, as a matter of fact. I think the members of the firm promoting it came to see us about their advertising and we corrected it and brought it down to what we thought was in line with the requirements of the regulations. The product itself was analyzed and the packages in which they came were examined, and in so far as we were able to ascertain, it was sold in a legal manner. We of course were not able to be present at the door when the salesman was there, so we do not know exactly what he said. But all printed advertising was within the requirements of our law.

Mr. HOWARD: Sometime in the later part of 1960 the directorate submitted or prepared some draft regulations with respect to drugs which were to have been submitted to the minister after they had been circulated to the drug manufacturing industry; and there was some discussion in the house about it around that time. Could you tell me what happened to those proposed regulations?

Dr. MORRELL: Yes.

Mr. HOWARD: Perhaps this matter was dealt with when I was unable to be present, at a previous meeting.

Dr. MORRELL: What you refer to as regulations are trade information letters; they were not regulations at all. There was an information letter containing a proposed draft of regulations which we thought would be useful and perhaps necessary in controlling the manufacturing controls in relation to the production of pharmaceuticals and other drugs. The proposals were sent out to the industry and we had comments from various parts of the industry, and we had meetings with them. We remodified them to some extent and we sent them around again, and we ourselves had a lot of discussion among ourselves and so time passed. Last fall I believe they were submitted to the minister and there has been some discussion about them since. I think they are before him now.

Mr. HOWARD: One of the things which intrigued me about it is this: I could not get them in the house by motion; so we had to try another way to get them. It says, as proposed in C.01.014—is that the way you designate these clauses?

Dr. MORRELL: Yes.

Mr. HOWARD: It reads as follows:

C.01.014. No manufacturer shall sell a drug unless the drug has been manufactured and tested under conditions that are suitable to ensure that the drug will not be unsafe for use.

C.01.014. For the purposes of C.01.014 the conditions that are suitable to ensure that a drug will not be unsafe for use shall include:

- (i) a system of control that will permit a complete and rapid recall of any lot or batch of a drug from the market when such is found to be unsatisfactory or dangerous.
- (j) the maintenance, in a form, manner and content satisfactory to the director, of records showing:
- (vi) the measures taken to ensure the recall from the market of unsatisfactory or dangerous lots or batches of drugs.

The CHAIRMAN: Dr. Morrell did say yesterday in answer to questions from Dr. Horner and Dr. Orlikow that there was a certain section which was intended to tighten up this situation. I thought I should draw that to your attention, Mr. Howard.

Mr. HOWARD: Yes, certainly. Perhaps this is something you would not care to answer, Dr. Morrell?

Dr. MORRELL: No, no.

Mr. HOWARD: Are these provisions, as attached to your trade information letter of December 28, in the proposed regulations which you submitted to the minister last fall?

Dr. MORRELL: They are still there, yes.

Mr. BALDWIN: I would like to deal with another subject which is somewhat related to what we have been discussing so far. Under the Broadcasting Act I understand that indirectly certain responsibility comes on your department in that before there can be commercial advertising permitted of drugs the advertisement must be approved by your department. Dealing with the procedure in that regard—and in answering you might give us some idea of what is done—do you feel, in the procedure followed now, that the material submitted to you by the various advertisers is satisfactory so that you are capable of delivering the opinion you are called upon to give?

Dr. MORRELL: Mr. Chairman, as Mr. Baldwin has said, in the regulations under the Broadcasting Act there is this requirement that all commercials for T.V. and radio must be submitted to the Department of National Health and Welfare for approval—and the word “approve” is used—before they are put on the air. There is an arrangement now under which T.V. and radio commercials are sent to us routinely. I think there are 30 to 35,000 per year which come to us. These are examined by a group of persons who are technically qualified in the inspection services of the headquarters to see that they comply with the requirements of the Food and Drugs Act in respect of advertising. In fact, the section reads to the effect that no person shall advertise any product—

Mr. BALDWIN: Sections 5 and 9.

Dr. MORRELL: You are right. There is a good deal of work necessary on many of them. A blue pencil is used quite frequently. When we are finished with it the script is returned to the broadcasting officer who deals with these and then I think of course they are looked at from their own point of view, too. I

think, however, that the arrangements are quite satisfactory in so far as we are concerned now, and I think we have been able to deal with them quite well. That is my opinion, at least.

Mr. BALDWIN: You feel that you have an adequate staff to deal with the quantum of 35,000 in a year?

Dr. MORRELL: Well, it is pretty fast work.

Mr. NICHOLSON: I would like to follow up what Mr. Baldwin has had to say about this matter. How closely does your branch work with your opposite numbers in the United States? I am thinking now of the larger cities like Montreal, Toronto, Hamilton, Windsor and Vancouver, all of which have American T.V. and radio stations coming in to them. Speaking for myself, so far as Vancouver is concerned, we get far more advertising from United States stations telling us the wonderful properties of these drugs that come on the market. You must have a working arrangement with the United States on that. Do they have similar provisions? How do you work on this as between the respective branches of government?

Dr. MORRELL: We have not been able to exercise any authority over advertising that originates in the United States. I might add that this is also true of printed advertising which comes in here from the United States. The food and drug administration in Washington does not have authority over advertising in the sense that the food and drug directorate in Canada has. In the United States the control of advertising is exercised by the federal trade commission in Washington. I have visited the federal trade commission and have spoken with them about the problems which arise because of the differences in our laws; but they have not been able to suggest anything which would be particularly helpful to us. So, I am afraid we are faced with this difference between the advertising originating in the two countries. Frankly, I do not know what to do about it.

Mr. HORNER (*Jasper-Edson*): I would like to question Dr. Morrell in respect of quality control. First of all, do you think this is a government responsibility or a responsibility of the manufacturer.

Dr. MORRELL: I think quality control is a responsibility of the manufacturer firstly, positively and very strongly. Then, secondly, I think the government has a part to play in seeing that the manufacturer does have and does exercise adequate and suitable quality control over his products.

Mr. HORNER (*Jasper-Edson*): I notice in the annual report you say that your recommendations in respect of the new regulations will help you do this; that is, help you to have some supervision over quality control.

Dr. MORRELL: Yes, indeed; I am sure they will.

Mr. HORNER (*Jasper-Edson*): Which you do not have now?

Dr. MORRELL: Not in nearly the same degree; they are not spelled out in the detail they are spelled out in the proposed regulations.

Mr. HORNER (*Jasper-Edson*): I am thinking primarily of the important antibiotics going out under their generic names. Will this have an effect on these?

Dr. MORRELL: I think it will, yes.

Mr. HARLEY: First of all, has the medical profession, as a profession and not as an individual, ever asked the food and drug directorate to remove a drug from the market?

Dr. MORRELL: No.

Mr. HARLEY: Mr. Chairman, I wonder whether this committee would consider a five minute recess to give Dr. Morrell a short respite from his questioning?

The CHAIRMAN: Is the committee in agreement with that request?

Agreed.

The CHAIRMAN: We will resume at five minutes to 11 sharp.

—Recess.

—Upon resuming:

The CHAIRMAN: Order, gentlemen. We will commence with Dr. Harley.

Mr. HARLEY: Mr. Chairman, I was wondering if perhaps we could switch the questioning and ask, through you, some questions of Mr. Hammond. I am thinking particularly of the control of drugs and I would like to ask him if he can tell us whether there is much of a problem these days in connection with the control of narcotic and controlled drugs.

Mr. R. C. HAMMOND (*Chief of the Narcotic Control Division, Department of National Health and Welfare*): Mr. Chairman, we do have problems in respect of both narcotics and controlled drugs. In so far as narcotics are concerned, the material that is being distributed in Canada for medical use causes few if any problems in the illicit traffic because of our system of control and the co-operation which is afforded to the department by those entrusted with supplies.

A somewhat different situation exists in relation to the controlled drugs (the barbiturates and the amphetamines); in other words the depressants and stimulants. The material causing the problem up until recently was supplies that were being diverted from that intended for medical use.

To recapitulate, the narcotic material causing problems in Canada is heroin which is being smuggled into the country, and in so far as the depressants and stimulants are concerned, the material which has been subject to abuse is medical supplies being diverted.

Subsequent to September, 1961, when the legislation in reference to controlled drugs was brought into force, a licensing system was provided over distributors and manufacturers and in addition controls in the form of records at the retail pharmacy level. Since that time there has been a marked improvement in so far as controlled drugs are concerned.

Mr. HARLEY: This question would probably be a better one to pose to the R.C.M.P. However, have you any idea of the amount of illegal trafficking going on in connection with these two groups and, as we have been talking about the safety of drugs, have you any idea of the number of fatalities recorded in Canada as a result of the illegal use of these materials?

Mr. HAMMOND: I cannot comment on that. We are endeavouring to maintain statistics in connection with fatalities. We know in the city of Vancouver for example, within the last three years, there has been quite a noticeable increase in the number of fatalities attributed to the use of barbiturates. I would not even venture to give a figure at the moment, but I think in 1962 the total number of fatalities which occurred from January 1 to August 1 of that year almost equalled or exceeded the number of fatalities in the previous year.

Mr. HARLEY: Would that figure cover fatalities from overdosage, or would it include suicides?

Mr. HAMMOND: This figure I believe would be separate from the figure in respect of suicidal deaths.

Mr. NICHOLSON: Following up that line of thought, is it not a fact that many of these fatalities result because people in a confused state of mind mix different things without knowing the right proportions? Have not the verdicts of coroners inquiries disclosed that fact in Vancouver?

Mr. HAMMOND: Many of these fatalities result from the combination of alcohol and barbiturates.

Mr. NICHOLSON: I understand these individuals take goof balls with alcohol in an attempt to get the biggest kick without there being any medical knowledge involved.

I am not sure, Mr. Chairman, whether the question I intend to ask should be directed to Doctor Morrell or not. Has anyone on your staff, Doctor Morrell, made a study of the work that has been going on in Britain where they have these clinics supplying narcotics to drug addicts? I have read a great deal about this program in the newspapers but I am not sure of the accuracy of these reports. Has anyone made a study of whether or not that program is in fact curtailing the use of narcotics or preventing associated crimes?

The CHAIRMAN: I might just say that I do not intend in any way to restrict this committee but my view is that we are straying a little far from the aspect of safety in regard to drugs in Canada. I may be wrong in that view and I hope members of this committee will give me their views in this respect.

I think Doctor Cameron will have something to say in regard to that question.

Dr. CAMERON: Mr. Chairman, we are endeavouring to follow the work being done in Britain and we certainly are in consultation with medical groups and others in this country with a view to finding improved methods of dealing with confirmed addicts. I do not think the information we have from Britain so far makes it possible to draw any hard or fast conclusions about the success of the work which they are doing there.

Mr. NICHOLSON: I do not wish to pursue this matter to any great length, but a great deal of attention has been directed toward this program through newspapers and other news media. I am not sure of the accuracy of the press and other reports in this regard. Is it possible, or do you know, Doctor Cameron, for an addict in Britain to get a fix, as they refer to it, quite readily?

Dr. CAMERON: Are you referring to Canada?

Mr. NICHOLSON: No, I directed my question in respect of England. Are the newspaper articles which indicate this availability of drugs to addicts exaggerated?

Dr. CAMERON: I think the position there is that if a duly qualified medical person wishes to undertake the treatment of an addict it is perfectly legitimate for him to do so. Here and there you will find medical people who take this type of treatment upon themselves.

If such a doctor in the course of that treatment decides that it is reasonable to give an addict a dose of a drug it is perfectly legitimate.

The aspect of this which is contrary to the law here, and I imagine it is also in Britain, although I cannot say for certain, is the provision of drugs for the purpose of peddling them. If the drug is being given for treatment and honestly administered by a physician in the belief that he is doing this properly, then it is not against the law and we would not interfere with such a practice at all.

It is perfectly evident to us all, and I might even say glaringly evident, that we need much better methods of dealing with drug addiction than we have at the present time. We do not feel that we are really coping with this problem at all. We are trying to suppress the illegal trafficking in drugs, but the progress in the direction of a reasonable and effective treatment of a drug addict is very slow and discouraging.

Mr. HARLEY: Mr. Chairman, I should like to direct my line of questioning to that aspect of our scope of the terms of reference. I am referring to controlled drugs and the associated enforcement in this regard.

In view of the results attained by the inclusion of amphetamines and phenobarbs in the controlled schedule, do you feel that it would be of assistance to you if this new family of tranquilizers was also included in the controlled schedules? If your answer is in the affirmative, then I should like to ask how much additional work and change such a step would mean to your department in terms of staff and money.

Dr. MORRELL: Mr. Chairman, we are of course watching the sale of drugs other than those which are on schedule G. The purpose of schedule G, as I understand it, is to stamp out the illegal trafficking on the streets by pedlars to those individuals wishing to buy them in dance halls, or wherever they do buy them. As far as I know that was the sole purpose of the amendment to the act and the regulations involving the enforcement of schedule G. If we find that there is evidence that trafficking in drugs other than those under schedule G, I would feel we will have to make a recommendation to the minister that such other drugs be added to the schedule.

I cannot say at this time whether this illegal sale is imminent or very likely in the near future, but it certainly is a possibility which we have in mind.

Secondly, and perhaps Mr. Hammond could say a word or two in this regard, having had years of experience in the enforcement of the Narcotic Control Act, the addition of the extra work required by the enforcement of schedule G has been very considerable. The reason for this is that of the much wider use. Mr. Hammond can correct me if I am wrong, but I feel there are more dealers and more products in this regard and therefore a great deal more work in connection with the enforcement of schedule G than perhaps there is in connection with the Narcotic Control Act. Any addition to schedule G of a group of drugs such as all of the tranquilizers would of necessity require a very considerable increase in the work of enforcement. I do not think such an addition would be justified unless there is evidence of significant trafficking in these particular drugs. This is the attitude we are now adopting.

Have I answered your question?

Mr. HARLEY: I wanted to ask Mr. Hammond whether he would like to comment on the increase in the work of enforcement if such drugs were included in schedule G.

Mr. HAMMOND: Mr. Chairman, as Doctor Morrell pointed out, controlled drugs are used much more extensively, as Doctor Harley will realize, than narcotics, and the increase in the work involved to establish control is considerable.

We have roughly 160 odd firms licensed to deal in narcotics and there are approximately 320 odd firms licensed to deal in controlled drugs. While I think that controls in themselves are essential, other factors are equally important in preventing abuse of these drugs.

The CHAIRMAN: At the last meeting several members of the committee asked me if I would get Mr. Curran to explain the federal-provincial responsibility with regard to licensing in a full way, if possible. I wonder whether it is the wish of the committee now that Mr. Curran make his statement on that.

Mr. NICHOLSON: How long is it likely to take, Mr. Chairman?

Mr. R. E. CURRAN (*Legal Advisor, Food and Drugs Directorate*): Mr. Chairman, it should not take too long. It depends on the number of questions that will be asked.

The CHAIRMAN: Was there some reason, Mr. Nicholson? Is there another meeting you wish to attend?

Mr. NICHOLSON: Yes. The Liberal contingent here has a problem.

The CHAIRMAN: Mr. Curran, if you could make your statement between now and 11.30, we will then reserve the questions until the next meeting. Would that be all right?

Mr. NICHOLSON: Yes.

Mr. CURRAN: Mr. Chairman, firstly, I am glad to have the opportunity to clarify a position which is not always clear even to lawyers, and also I hope I will be forgiven if I do not make this thing as clear as I might to people who are not lawyers.

The Food and Drugs Act, as I mentioned at the last meeting, is on the basis of criminal law, and under the authority of criminal law there is no power to license a trade or profession generally. Now, I wish to distinguish between licensing particular products which are manufactured by the trade and licensing a trade to carry on generally its operations. If you look at sections 12 and 13 of the act you will see this distinction.

The CHAIRMAN: What page?

Mr. CURRAN: Page 3 of the act. You will see in sections 12 and 13 that no person shall sell any drug described in schedules C, D or E unless the minister has, in prescribed form and manner, indicated that the premises in which the drug is manufactured and the process and conditions of manufacture therein are suitable to ensure that the drug will not be unsafe for use. Following along from that, if you look at pages 91 and 100 of the regulations you will see that regulations have been made to implement the provisions of the two sections to which I referred. The first of them is on page 91 and it deals with what are called "schedule C drugs". On page 100 you will see reference to drugs which are on schedule D. The licensing authority here is very strictly limited to the manufacturing process and the conditions of manufacture to ensure that the drug is not unsafe for use. These are the criteria which form the basis of licensing in both of these areas.

Some reference has been made to licensing of controlled drugs. This is pursuant to a special part of the act which is part III and which was added a year ago. I am not going to get into the question of narcotics which involves separate consideration but nevertheless is much on the same basis. So we have under the authority of sections 12 and 13 and under the authority of part III provided for a form of licensing in relation to particular substances. This must be distinguished from the licensing of a trade in general to carry on its business. Here the licence is limited to particular products, and obviously based upon some reason to subject a drug to this form of licence. In the case of the drugs in schedules C, D, and E, I think the reason is given in referring to the conditions of manufacture being suitable to ensure that the drug will not be unsafe for use. Even though a licence is given, it does not mean that the drug does not otherwise have to conform to the requirements of the law. Broadly, every drug which is sold in this country, either manufactured here or brought in, must conform to two provisions of the act amongst others: one is that the drug must meet the standard under which it is manufactured and the standard must be identified on the label, and the other is that the drug may not be deceptively advertised or sold. These are the general overriding conditions which apply to all drugs including those for which a licence is granted.

Now, it has been suggested from time to time that we should have a provision that no person shall manufacture any drug unless he has a licence. Such a provision in my view would certainly be at least arguable as to validity, subject of course to any different views held by the lawyers on this committee as to whether they feel this would be a valid exercise of parliamentary authority. I think, under the basis of the Food and Drugs Act, it would

be a very dubious provision and easily could be challenged in court and imperil the very broad and good administration which has been developed. So we have been very careful to limit our licensing authority to those drugs which pose special problems either in health fields or perhaps in the broad field of fraud—but particularly in the health field—where the conditions of manufacture have unusual features and where safety of a drug as related to manufacture may not be readily determined even on analyses.

There are many drugs which on analysis of the end product might not reflect certain essential conditions of manufacture, and so it is necessary, in relation to those drugs, to ensure that the conditions of manufacture are adequate for the purpose, and to ensure that the drug will not be unsafe for use.

That, broadly, is the basis on which we have developed a form of licensing. You will see that even in the act itself we are very careful in sections 12 and 13 not to use the word "licensing". We talk about the prescribed form and manner of the minister's indication of approval which in effect is a form of licensing. We have used the word "licence" in controlled drugs, which involves separate considerations.

Now, at the provincial level it would be appropriate, I think, under the authority which is contained in section 92 of the British North America Act, for a province under the property and civil rights provision to insist on the form of licensing of any manufacturer carrying on business in the province. I am not prepared to say to what extent the provinces have got into the form of licensing but certainly it would be of very dubious validity if the federal government, under the authority of the Food and Drugs Act purported to license every manufacturer for a drug. So I want to make it abundantly clear that we are distinguishing between the general authority to license a trade or business, which in my view is beyond the competence of parliament, and the authority to license a manufacturer in relation to a particular product which can be potentially harmful.

Mr. MITCHELL: May I ask Mr. Curran a question? Speaking provincially, would this be under the provincial department of health or under the pharmacy act or something of that nature?

Mr. CURRAN: It could be under any form of legislation the province wished to devise. It could be under the factories act which would require a form of licensing, or under the pharmacy law or under the department of health of a province. Where a province puts the authority is its own decision.

As I said a moment ago, I am not prepared to say to what extent the provinces have entered into this field. I think the field is one in which the provinces have not intervened even though they might do so. There are many factors which would need to be considered by a provincial authority in licensing a manufacturer and particularly one which was carrying on business in many parts of Canada as well as perhaps internationally. This poses a separate area and the area I have broadly attempted to explain is the licensing of certain products under the Food and Drugs Act. I might add that the schedules in question can be amended by adding anything to the schedules or deleting anything therefrom in the interest of health.

I have attempted to explain the rather unusual situation which arises when we talk about licensing a product in one context, while in the other context we say that we have no authority to license a trade. If I have made clear to you the subtle distinction between licensing a product and licensing the manufacturer at large, I am glad. If not, I would be happy to try again. Does what I have said generally cover the situation?

The CHAIRMAN: I think so. We have only four minutes, gentlemen.

Mr. NICHOLSON: While Mr. Curran is here, there are a couple of points concerning the work of this committee which disturb me. First of all, I refer to section 13 of the Food and Drugs Act which reads as follows:

13. No person shall sell any drug described in schedule E unless the minister has, in prescribed form and manner, indicated that the batch from which the drug was taken is not unsafe for use.

Does that mean that every new batch of a drug has to be approved by the minister—or by his representative?

Mr. CURRAN: Yes. Broadly speaking, with respect to the drugs in schedule E, a sample test is made from each batch.

Mr. NICHOLSON: You mean from every individual batch?

Mr. CURRAN: Every batch, that is right. Before the drug is released for sale, there must be clearance given by Dr. Morrell that the drug has met the particular condition.

The CHAIRMAN: That only applies to the drugs mentioned in schedule E?

Mr. NICHOLSON: I know, but schedule E is very comprehensive. Just how are the tests made? Is it done by means of a spot check?

Dr. MORRELL: You will notice the drugs on schedule E are mentioned at page 10 of the act.

Mr. NICHOLSON: There are 6 classifications given in schedule E, and I notice "sensitivity discs and tablets".

Dr. MORRELL: Sensitivity discs and tablets are those paper discs or tablets which contain various antibiotics and which are used to test the sensitivity of bacteria or effectiveness of certain antibiotics against certain bacteria which may be affecting the patient. Each one of these is tested prior to distribution. This involves, of course, quite a lot of work as you will imagine.

Mr. NICHOLSON: It is not done by means of spot tests? There is an actual detailed test made of each batch?

Dr. MORRELL: That is right.

Mr. HARLEY: There would not be very much volume in the actual amount in the case of most of these drugs?

Dr. MORRELL: When I started to work in the laboratory, these were quite important. But with the introduction of antibiotics such as penicillin, this has made them of rather minor therapeutic use.

Mr. NICHOLSON: My next question is prompted by section 14 subsection 2 "distribution of samples prohibited".

14. (1) No person shall distribute or cause to be distributed any drug as a sample.

(2) Subsection (1) does not apply to the distribution of samples of drugs by mail or otherwise to physicians, dentists or veterinary surgeons or to the distribution of drugs, other than those mentioned in schedule F, to registered pharmacists for individual redistribution to adults only or to a distributor in compliance with individual requests.

The distribution of samples is done on a large scale to doctors, and subsection 2 of section F is so wide, that I wonder why samples are not distributed to pediatricians, for instance, and why they are limited for distribution to adults only?

Dr. MORRELL: That has been amended, as you know by bill C-3, and it is no longer the law.

Mr. CURRAN: There is a new section 14 in the amending act.

Mr. NICHOLSON: Perhaps I had better get it and study it before I pursue this.

Mr. HARLEY: I believe it includes all branches and pediatricians. Certainly pediatricians do get samples.

The CHAIRMAN: It is just about 11.30, and before we adjourn, may I say that on Tuesday next, February 5, at 9.30, a special committee of the Royal College of Physicians and Surgeons will be here. I hope you will have a chance to look at their brief over the weekend. I also hope that this presentation and the questioning of the people who are going to be here might be finished on Tuesday, for certain reasons. However, if it cannot be done, then that is that. But we are thinking of sitting from 9.30 to 12.30, and after the orders of the day until 5.30 in the hope that in those 5 hours we might be able to get this matter cleaned up.

Mr. MITCHELL: We will be coming back to the witnesses who are here now?

The CHAIRMAN: Oh yes, the witnesses of the department are available.

Mr. MITCHELL: You are only suggesting that the out-of-towners be given a hearing next week.

The CHAIRMAN: I think it is only fair when any witnesses are brought here from away that we give them a specific time so that they will not be here a week or two. The men coming are very busy, so if we could confine our examination to the witnesses, that would relieve two or three members until next week and we could get it done expeditiously.

In respect of our proposed trip to Montreal the first of the week I shall be asking the house for permission. We shall start on February 14, a Thursday. The train leaves the Ottawa station at 7.55 in the morning. I hope there is no objection to that.

Mr. BALDWIN: Would it be possible for Dr. Cameron or Dr. Morrell to make available to us the 1961 amendments, and the amendments for this year to supplement the consolidated statutes that we now have?

The CHAIRMAN: Yes, Dr. Morrell will do that.

The other point I wish to bring up is that the Canadian Pharmaceutical Manufacturers Association will be here on March 5th and we have arranged for it. They are bringing a complete presentation and also specialists in the fields of pharmacology and chemistry, that is, from the industries they are involved with, and they are preparing papers for us in each of the sections involved in the presentation. So we will have a very comprehensive hearing. The reason we have left it until March 5 is to give them ample time to have all these things prepared, for it will be done in great detail.

Mr. HARLEY: Could they provide the material to us before they arrive?

The CHAIRMAN: You mean if we could get their brief beforehand; but there will be a general brief from their association, and each of the specialists in the fields will give a supplementary paper which I think he would want to give personally rather than to have a written statement given to the committee beforehand. But so far as the over-all production of the brief is concerned, there will be ample time for it.

Mr. NICHOLSON: I think we should get it as far in advance as possible.

The CHAIRMAN: I shall ask them to give it to us in advance. I hope there will be sufficient length of time.

Mr. NICHOLSON: I hope you will suggest a few days.

The CHAIRMAN: Perhaps we had better discuss this right now. It is my view that if a witness is coming to this committee he should be required to send us a

written statement beforehand. But in general practice if we bring a pharmacologist, let us say, from the University of British Columbia, to examine him on something specific, I do not think he should be required to file with this committee the evidence of what he is going to say. However, I think that with associations, at least, they should give us an outline of what they are going to do specifically, but I do not think they could be forced by this committee to give a complete documentation of what specialists they intend to bring in are going to deal with. Is that in accordance with the wishes of the committee? Is there any further business?

Mr. HARLEY: Is it the intention of the committee to sit this afternoon to try to finish our questioning of Dr. Morrell?

The CHAIRMAN: It is my view that there will be other business on our mind that we might all want to think about this afternoon, and that we might wait until 9:30 on Tuesday morning next.

MINUTES OF PROCEEDINGS

TUESDAY, February 5, 1963.

(5)

The Special Committee on Food and Drugs met at 10.10 a.m. this day, the Chairman Mr. R. M. T. McDonald, presiding.

Members present: Messrs. Baldwin, Fairweather, Haidasz, Harley, Marcoux, McDonald (*Hamilton South*), Mitchell, Nicholson, Rynard, and Valade—(10).

In attendance: Dr. F. S. Brien, Professor of Medicine, and Head of the Department, University of Western Ontario, London, Ontario; Dr. E. A. Sellers, Professor of Pharmacology, Head of the Department, University of Toronto, Toronto, Ontario; Dr. R. Roger Dufresne, Director, Department of Medicine, University of Montreal, Montreal, Quebec; *from the Department of National Health and Welfare:* Dr. G. D. W. Cameron, Deputy Minister of National Health; Mr. R. E. Curran, Legal Adviser; Mr. Eric Preston, Director of Personnel; Mr. B. Hazelton, Personnel Administrator for Food and Drugs; Mr. D. H. Duns-muir, Executive Assistant to the Minister; Dr. C. A. Morrell, Director of the Food and Drug Directorate.

The Chairman observed the presence of a quorum. He introduced the three members of the Special Committee on New Drugs appointed by The Royal College of Physicians and Surgeons of Canada at the request of the Minister of National Health and Welfare, namely: Dr. Brien, Dr. Sellers and Dr. Dufresne, and invited the Chairman of the said committee to make a statement based on the contents of their report.

Dr. Brien emphasized the working conditions of the Food and Drug Directorate and the need for a method to deal with drugs that have been used for many years. He also dealt with the recommendation pertaining to the establishment of a "Working" standing drug committee.

The Chairman thanked him and the other two members of the Special Committee on New Drugs for the work they have done during seven months to prepare this Report.

Dr. Brien, assisted by Dr. Dufresne, Dr. Sellers and Dr. Morrell answered questions, more particularly Need for Expansion of the Food and Drug Directorate, and Clinical Trials in Canada.

At 12.15 p.m. the Committee adjourned until 3.30 p.m.

AFTERNOON SITTING

(6)

The Committee reconvened at 4.15 p.m. and continued its examination of the members of the Special Committee on New Drugs appointed by The Royal College of Physicians and Surgeons of Canada.

Members present: Messrs. Baldwin, Enns, Fairweather, Haidasz, Harley, Marcoux, McDonald (*Hamilton South*), Mitchell, Nicholson, Rynard, Valade—(11).

In attendance: Same as at morning sitting.

At the request of the Chairman, the Committee agreed to hear Dr. Sellers first.

Dr. Sellers made a short statement on Sections 4 and 5 of the Report dealing with Concepts of New Drug Control and Present Procedures of the Department with respect to New Drugs. Dr. Cameron added an explanation about training of departmental staff. Dr. Sellers, Dr. Brien and Dr. Dufresne were jointly questioned. Dr. Sellers was permitted to leave.

On Section 10, Consideration of the Division of the Food and Drug Directorate into Food and Drug Sections, Dr. Brien, Dr. Morrell and Dr. Dufresne answered questions asked by Members.

Sections 12 and 13, Summary of Recommendations and Conclusion were considered.

Before concluding the discussions, the Chairman thanked Dr. Brien, Dr. Sellers and Dr. Dufresne for appearing before the Committee and for the information they had given. He expressed his regret that Committee proceedings had appeared to be rushed and were delayed in starting. These circumstances, however, were beyond the control of the Committee.

On motion of Mr. Mitchell, seconded by Mr. Rynard,

Resolved,—That the Report of the Special Committee on New Drugs appointed by The Royal College of Physicians and Surgeons of Canada at the request of the Minister of National Health and Welfare be printed as an appendix to the Minutes of Proceedings and Evidence of today's sitting. (See appendix "A").

At 5.50 p.m. the Committee adjourned until Thursday, February 7, at 9.30 a.m.

Gabrielle Savard,
Clerk of the Committee.

EVIDENCE

TUESDAY, February 5, 1963.

The CHAIRMAN: Gentlemen, we have a quorum. Before we get to today's proceedings I would like to check just one thing with the committee. The clerk of the committee sent around a note about a proposed trip to Montreal next week. I wonder if those who are going would inform her before tonight so that we can make definite arrangements.

We have with us today the special committee of the Royal College of Physicians and Surgeons pertaining to the new drug situation. Dr. F. S. Brien, professor of medicine and head of the department of the University of Western Ontario and chairman of the special committee of the Royal College is on my right. Dr. Roger Dufresne, director of the department of medicine, University of Montreal, is on the right of Dr. Brien, and Dr. E. A. Sellers, professor of pharmacology, head of the department of the University of Toronto is on Dr. Dufresne's right.

It was thought that the chairman of this committee would make a statement, and then this committee could ask questions on the general statement, but, for continuity, it was thought that in the context of the proceedings of the Royal College we should keep to specific questions so that we would have continuity. If that is in accordance with the views of the committee I think we will now call on Dr. Brien to make his initial statement.

Dr. F. S. BRIEN (*Professor of Medicine and head of the department, University of Western Ontario and chairman of the special committee*):

Mr. Chairman, I presume that you are all quite familiar with the contents of this report. There are just a couple of areas that I would like to emphasize. In the first place, it is perfectly obvious to us as a committee that the food and drug directorate is working under conditions that, to say the least, are infinitely more difficult than it can cope with with its present staff. Therefore, we have pointed this out and we have recommended to the minister that steps be taken to increase the membership of the directorate particularly in the higher echelons. As you already know, considerably more than 50 per cent of the time and energy of many of the directorate is expended on food and food additives as contrasted with drugs, and we have given various reasons for the need for increased staff.

The second point I would like to make is that as we have proceeded through the study which actually has encompassed about seven months, it has become quite obvious to us that there is a need for a consideration not only of our methods for dealing with drugs that may properly be termed new within the framework of the act but also with respect to any old ones, ones that have been used for many years. This, in particular I think, is important with respect to, firstly, children, and secondly, pregnant women. The hazards and the effects of drug dosage that have been hitherto unsuspected have become increasingly apparent over the last few years especially. This was one of the reasons why the other recommendation which we consider to be most important was, further setting up, either from the presently existent Canadian drug advisory committee or from other sources, or partly from it and partly from other sources, what we chose to call a standing drug committee. You will notice that we put "working" before the capitalized words "standing drug committee". I am

perfectly sure, and I think I have the concurrence of my colleagues here to my right, when I say that if this committee is going to be any good it will require the same kind of effort that the three of us have put into this report and all that has gone before it.

I am sure that some sort of a committee such as that can grapple with problems not only as they arise but also with the ones we have dug out in this list of appendices which totals 48—and I have another one which I received last week, which I will submit as a latecomer and which I think you will find very interesting. In it, and particularly in appendix 48, are brought together the subjects that we as a group felt required the most pressing or the most urgent study. We felt that this committee should be a continuing one and that it should not be a static group. We did not specify the number but we felt it should be a relatively small one in which most, but not necessarily all, of the members should be physicians, and that they should be appointed with overlapping periods of service. We used the term “short duration” and by that we mean either two or three years, although again we did not specify that.

Now, I think that those two matters to which I have alluded are the most important of all. We have made certain recommendations—I think five in all—for what we regarded as not general or drastic changes in the regulations as they presently exist, and we felt that no committee, constituted as we were, could properly undertake any general revision of the regulations even just relating to new drugs. We did make one recommendation with respect to bill C-3, dealing with the total proscription of L.S.D. and thalidomide in which we suggested that perhaps L.S.D. could be loosened up a little bit but with all the controls you want on it, and that thalidomide might be released to the experimental and laboratory field but not to the clinical field. As you all know, there is a mechanism whereby any drug that is proscribed may be obtained legally in this country, and all it requires is to get the assent of the cabinet. I gather that this could be a difficult feat on most occasions, but in fact there is such a mechanism. That is all, Mr. Chairman.

The CHAIRMAN: I am sure you would like me to say, on behalf of the committee, that we are indebted to these three men and to the Royal College of Physicians and Surgeons for the work they have done in the seven months they took to make up this report. I think we will throw the meeting open to questions generally and then we will try to speak specifically, starting with section 4 in the index, which is the concepts of new drug control, so that we can have some continuity. Can we have a general question on the chairman's statement?

Mr. BALDWIN: I wonder what you had in mind, Dr. Brien. Do you feel we could use the existing machinery provided by the amendment we made to the act last year to deal with the two drugs you have mentioned. Do you feel that the existing machinery, as we provided it by year's amendment or by this parliament's amendment, is now capable of effecting the purposes you have in mind?

Dr. BRIEN: I take it that you know that the only information I have is what I either heard on the news or read in the paper and that was to the effect that thalidomide would be released for animal usage and L.S.D. for either animal usage or for certain qualified investigators or clinics. Am I correct in that?

Mr. BALDWIN: Dr. Morrell might probably have the answer.

Dr. C. A. MORRELL (*Chief, Food and Drug Directorate, Department of National Health and Welfare*): So far regulations have been passed exempting L.S.D. from the total prohibition and providing restrictions on its distribution to institutions approved by the minister for use in those institutions by qualified

investigators under certain restrictions. Thalidomide has not yet been dealt with in any way.

Dr. BRIEN: So far as I am concerned, and I am speaking personally now, in so far as L.S.D. is concerned I would consider that this is adequate. As you might well suspect I have been bombarded by people who were interested in L.S.D. either from the standpoint of the treatment of acute alcoholism or, in some instances, the broader area of mental illness. I would be quite satisfied with its release under the conditions that Dr. Morrell has set forth. I would suggest, in reply to Dr. Rynard, that it can be a very useful tool in the investigation of either congenital defects on the one hand or perhaps in the inhibition of cancerous growths on the other, certainly in the laboratory field. Again, speaking personally at this time, I am not sure that I would go further than that, and there are very sound reasons for this which I am sure are known to all of you.

If we obtain good experimental evidence that it is useful in the animal field, then I think there might be occasions where it would be justifiable to release it under control. When one works in a hospital where they count the medicines three times a day, as they do in the one where I work, and in all hospitals in respect of controlled drugs, it is the wastage that bothers me. I am not concerned about somebody that wastes or gets away with a single pill. You cannot get away with a lot of pills. However, when you are dealing with thalidomide one pill is too many. This is one of the reasons why right now I would restrict it myself to the animal field unless you could convince the governor in council that a certain amount should be released to an individual to do a particular piece of work. If I were that individual, I am afraid I would keep it in my pocket and deal it out pill by pill. That is the only way I could account for my own conscience.

Mr. RYNARD: Dr. Brien has answered about four-fifths of my questions. Do I take it that there is the occasional one across Canada—and I think all of us have had letters from somebody—who feels that thalidomide is very useful in his case and that it has helped him more than anything else he has had? I had a letter from a lady, who incidentally was not a patient of mine, who had migraine. She now has her migraine back and cannot get thalidomide. I am wondering whether there is some way in which these persons could get this drug? I am wondering whether it might be the feeling of this committee that it could be done in such a way that it would not affect the dangers of it getting out of hand, but could be used, for instance, by such a person in a small dosage for a certain number of days.

Dr. BRIEN: This is very interesting. There is no doubt, in dealing with older persons, that thalidomide is an excellent hypnotic. I am sure that many of you have heard objections expressed in respect of its withdrawal. I do not know whether this is true, but I have been told that it has now been released for use in mental hospitals in Great Britain; whether this is so or not, I do not know. I am not worried about that, but I am worried about the persons working in the mental hospitals and the danger that some of this drug might leak out.

The thing that bothers me is the number of persons who are pill changers. I know four very prominent ladies who go to four different doctors and they exchange pills. This is the thing that makes you fearful in dealing with an individual such as your patient. If we could be sure that no one else but this patient would get it, then it would not worry me in the slightest.

Mr. HARLEY: Dr. Brien, you mentioned the setting up of an action committee of the advisory committee on drugs.

Dr. BRIEN: Yes.

Mr. HARLEY: And you mentioned that it became obvious to you that there should be some method of reviewing not only the new drugs coming on the market, but also the old ones. I am wondering whether, in your thinking, you would go a little further and say how you think this could be done at the present time.

Dr. BRIEN: Would you tell me what kind of practice you are in?

Mr. HARLEY: General practice.

Dr. BRIEN: One area which is very, very interested in this, as you can perhaps imagine from my remarks, is the Canadian pediatric society. They looked into this with great care. They actually submitted some most useful comments, particularly in the dosage field and other aspects which relate to children. The Canadian drug advisory committee, which I think has 14 members, meets relatively infrequently, one or more times a year. You cannot take this group. This is something which requires the kind of work that we have done and it needs somebody to sit down and go through all the things that worry the pediatricians in an effort to straighten them out. Sometimes these children need many more times the dosage proportionately than adults do and sometimes infinitely less. There are effects that nobody dreamed about at the time I was a student. There must be a long-term study with regard to whether a drug might have some effect in producing cancer, or leukemia, or perhaps affect pregnant ladies, and so on. The pediatricians are, of course, very interested in that too, because they get the products of the delivery to deal with.

I think there are grounds for looking at the whole drug structure, particularly as it relates to pediatrics. There are a whole lot of drugs that need to be looked at. For instance, there is the whole spectrum in respect of the effect on the womb, the kidney, and things like that.

Mr. MITCHELL: Dr. Brien, I am not one of these physicians, but I am a practising pharmacist. In respect of your suggestion concerning the standing drug committee, do you feel that the drug advisory board as now set up is not doing its duty? There are a number of these things and sometimes I feel there are too many committees. I happen to know that the drug advisory board is meeting today. Is that correct, Dr. Morrell? Do you feel they are not doing their duty? I do not feel—and I am probably thinking of the directorate when I say this—that another standing committee can add anything more than the drug advisory board that is sitting now.

Dr. BRIEN: I can tell you exactly what I think about this without the slightest hesitation. This is a committee which I believe is composed of 14 members—and you can look this up because it is set out by order in council. It has the power to appoint subcommittees; that is quite true. What we are asking is the appointment of a working committee—whether it be a subcommittee of that one or something else, I could not be in the least worried about that. It would need three, four or five, preferably an uneven number of members, who would get down and really slug at it. A committee that meets once, twice or even five times a year is not even going to scratch the surface of what we envisage needs to be and should be done. That is putting it in a nutshell. I am not for a minute being critical of the drug advisory committee. It has not been consulted nor has it acted in the fashion in which we envisage here. I think probably that would be a fair statement, Dr. Morrell.

Dr. MORRELL: Mr. Chairman, I do not think it was set up with anything like this in mind at all.

Dr. BRIEN: No. As a committee of the whole it is too big; I am sure of that. Also, if you were to go ahead and endeavour to get three, four or five people out of it, or two or three out of it and a couple from somewhere else, and

try to work at this, I think you would have a difficult chore. It was because we realized this that we made such an ambiguous motion.

Mr. MITCHELL: Could the answer to my question be that this advisory board might meet more frequently?

Dr. R. R. DUFRESNE, B.A.M.D., F.R.C.P. (Canada), (*Member, Royal College of Physicians and Surgeons of Canada*): No.

Dr. BRIEN: We have a member of it here, Dr. Dufresne.

The CHAIRMAN: Dr. Dufresne, would you like to elaborate on this?

Dr. DUFRESNE: I would like to repeat what Dr. Morrell said a minute ago. This advisory committee was not set up to carry out the type of task we are hoping to get from this standing working committee. As the task of this prospective committee is envisaged, we look upon it as a working group, as we have stressed and underlined the word, and this could not be accomplished by a committee which has the mere task of meeting once or twice a year.

Mr. MITCHELL: If this committee was flexible enough to handle the action you want the standing committee to handle, and met more often, would this be satisfactory?

Dr. BRIEN: What would you call flexible enough?

Mr. MITCHELL: So that it would cover exactly what you are asking for here, which you say they are not doing for the simple reason that they have not had the opportunity or that they do not meet often enough.

Dr. BRIEN: They have not been asked to do it.

Mr. MITCHELL: That is why I use the word "flexible".

Dr. BRIEN: In that case the word "flexible" would be enough.

In this country it is difficult to get people to meet often enough; this is a problem.

Mr. MITCHELL: I realize that, but I also realize that the setting up of too many committees does not always achieve what you want.

Dr. BRIEN: I beg your pardon?

Mr. MITCHELL: The setting up of more committees than you need does not always accomplish what one actually started out to do. I am not speaking of this particular committee, but rather many, many committees.

Dr. BRIEN: I agree.

Mr. MITCHELL: If they were asked, they could be given the flexibility to do it.

Dr. BRIEN: Yes, and they would also ask for the proper means to do it. These would have to be busy people—and I do not mean that the advisory committee is not composed of busy people, it is—and if you have busy people you have to get them together and find a way of fostering this kind of meeting. What we envisage would require, I would say, not weekly but semi-monthly meetings for a long time in order to get the job done.

Mr. RYNARD: I would like to ask Dr. Brien if the thought behind this—and this certainly has been my feeling—is that the material that would go before this committee would come from the universities, the medical schools and from research work—but primarily from medical schools—and pharmaceutical departments of the schools and universities across Canada. I am wondering whether that is true—and I surmise it is—and do you feel that the people who are dealing with drugs in the universities and hospitals across Canada, particularly at the university centres, should be the ones appointed? I wonder whether that might meet a number of the objections to this organization which Mr. Mitchell was mentioning?

Dr. BRIEN: There is a tremendous overlap of work in committees of this sort of which you are probably well aware. Here we have the professor of medicine from the university of Montreal on the drug advisory committee right now; there are other university people on it, of course; there are other persons from the university who are not medical persons or who at least are from departments other than clinical medicine, and persons who are completely outside the university. It is a good over-all committee. It is quite true that most of the information that is contained in that last appendix is from universities in the sense that it comes chiefly from faculties of medicine, faculties of pharmacy—there are 20 submissions from those two alone—and from veterinary medicine; some very cogent material has come from veterinary medicine. The dentists were less interested in it, although this is not exclusive at all; they are interested in mouth hygiene, of course.

Then the professional societies are greatly interested in this and they include men who are both in universities and out. One of the very important submissions came from the pharmacological society of Canada, which includes one of our members here; it also includes some of the spectators here this morning. It represents chiefly teaching, industry and investigation of one sort or another. So, this is not completely a university affair. The information we have collected has come from a wide variety of sources which we deliberately tapped. We tapped everything we could think of which we thought would be helpful. A committee to deal with these matters should not necessarily be purely a university committee or from a group of universities. It is very apt to have a fair number of people on it because they are the kind of folks whom you can lure into doing this sort of work. This committee here is a classic example of that. They are the only kind of people—I am not just making it exclusive of all the other areas—who have the time and the energy to devote to it. You cannot take someone who works by himself and put him at something that takes all the time we have spent on this for the simple reason that whatever he is supposed to be doing suffers, as indeed it has so far as we are concerned.

Mr. RYNARD: Is there not a danger that this new committee might get into the same position of—I would not say chaos—lack of frequency of meeting that you have mentioned in respect of the other drug advisory board that is now meeting?

Dr. BRIEN: I am not sure. Dr. Morrell just said a few moments ago that it was not set up to do particularly the sort of job we figured this committee could do. It is quite true it has the power, as it is constituted, to set up subcommittees. We have just looked at the wording here. We deliberately tried to be diplomatic and, in fact, I discussed this both with Dr. Morrell and Mr. Monteith on several occasions before this was written because it is a very unusual recommendation to make.

We did not say that the committee was no good or anything of that sort, and that it should be replaced by another. We did not mean that either. The committee as it is now constituted and as it now operates is not doing this. If you could get out of it the people who would do what we want, then that would be fine. The thing we were anxious to do was to get this done, and if it could be done within the framework of the C.D.A.C., fine; and if it could take part of it, fine. But nobody on it would do it. I think the important thing is that if you set up this committee the people should agree to work on it and know exactly what they are getting into, and they are willing to do this. It is a real chore, let me tell you that. My wife is threatening to make an appointment to see me.

Mr. NICHOLSON: Mr. Chairman, I would like to discuss with Dr. Brien the angle pursued by Dr. Rynard earlier with regard to thalidomide itself.

Dr. BRIEN: Yes.

Mr. NICHOLSON: The doctor said very definitely, or I gathered the impression, that he thought that thalidomide was in the right place now, on the prohibited list, and is not even being released for use in laboratories. That leads me to ask this question: in the work of your committee, or in your medical research generally, have there been adverse side effects of thalidomide other than the one we associate with deformed babies, which leads you to that conclusion?

Dr. BRIEN: I can answer this again quite straight forwardly at least from such knowledge that I have. I said that I thought that thalidomide should be released to the laboratories, but not beyond because I am sure it is a useful tool, and has a place; and that if there was a suggestion that it might have a further useful place, we might subsequently take further action.

Now, the thing which led Dr. Kelsey to put a damper on thalidomide was not the problems that have rocked this country at all. It was, as far as I am aware, the fact that some paralytic phenomena were observed in people who had taken substantial doses over a period of three to six months, or something of that order. But they were adults; and this, I am sure has occurred. I cannot quote the figures, but I know it has been reported on multiple occasions, and only last week I got a letter from England, from friends of mine, on the outskirts of London. In this case the husband took what I am pretty sure was this. I am having difficulty with her writing. Not only doctors are poor writers; but I am pretty sure he has a multiple of these phenomena. By the same token, there is no doubt that it was very useful in my hands. In the time it was on the market, of course, I had no occasion to deal with the big labs; but in the older age group, it was a very useful agent, and we were fortunate that we had no side effects that I am aware of.

Mr. NICHOLSON: Is that a simple answer? Speaking as a layman, I am not a member of the medical profession.

Dr. BRIEN: I know.

Mr. NICHOLSON: Is that not an answer to the letters being directed to doctors and other members of the medical profession; that you are getting these other adverse and side effects? I know that in England there was quite a succession of newspaper articles about people losing the sense in the tips of their fingers and parts of their legs. So there would be danger even if a person was beyond the childbearing age, if he attempted to use it for migraine or anything else.

Dr. BRIEN: Yes, that is right.

Mr. HARLEY: I have two questions. First, to Dr. Morrell, I would like it if he could outline now what is the function of the drug advisory committee, and then Dr. Dufresne might tell us how you go about doing it, and if possible, give an example of a drug.

Dr. MORRELL: The drug advisory committee is now constituted or set up for the purpose of advising the food and drug directorate of the Department of National Health and Welfare with respect to any special problems which come up with respect to a particular drug or class of drugs. For example, should they be put on prescription, or should they not? Should certain action be taken with respect to drugs, and new regulations established with respect to a group of drugs? These were problems put forward to the committee from time to time when they met. No time consuming thorough study in depth of the food and drugs regulations or the act by the organization has ever been asked of the committee. We felt that sometime we needed advice,

as to what we should do in particular circumstances about a particular drug or class of drugs; and this is the type of thing that has been put before them.

For example, the drugs that are put on prescription—we have asked from time to time that the drug advisory committee give us a set of rules, for example, which we could follow in putting a drug on schedule F, which means that you can only get it from a doctor's order. And they have provided these rules, and I think this morning they are reconsidering them. We shall ask them also about drugs which are put on schedule G, or control drugs. We do not put a drug on schedule G until we have discussed it with them, unless there is a dire emergency, whereupon we would let them know what we have done as soon as possible. This is the type of thing done by the drug advisory committee in the past.

Mr. HARLEY: What is the position of that committee at the present time?

Dr. MORRELL: There are two members of the Canadian Pharmaceutical Manufacturers Association; two members of the Royal College of Physicians and Surgeons; two members of the Canadian Medical Association; two members of the Canadian Pharmaceutical Association; two members of a proprietary association, a manufacturer's association; and there is a member of the Pharmacological Society of Canada. The chairman is Dr. Cameron, while I am the deputy chairman, and there is a secretary from the department. Other members of the department sit in at the meetings, but they are not really members of the committee.

Mr. NICHOLSON: No members of the department of pharmacy of any of the universities?

Dr. MORRELL: The Canadian Pharmaceutical Association is represented by Dean Houston at the moment, and Jack Summers. Dean Houston is dean of pharmacy at the university of Saskatchewan, while Jack Summers is a hospital pharmacist. I think he was president of the society of hospital pharmacists a year or two ago anyway.

Dr. DUFRESNE: Would you mind repeating your question for my benefit?

Mr. HARLEY: Once the advisory committee has had a problem referred to it such as Dr. Morrell outlined, how does the committee then function? Is it strictly an advisory group, or would you go to a university and ask them to do research? Or do you go elsewhere for other things?

Dr. DUFRESNE: If you are speaking of my answer to this problem, problems have to be met, such as last year, for example, and it was, in some respects easy enough to say that a person could answer them without going to any university people about it, because I already have university people. But what I want to stress is that for any study in depth, a prolonged examination of the problem is necessary which would give the very kind of material we have covered, and I do not expect this advisory committee to reach for definite problems. Once or twice a year could do it as it is, and I hope you understand that. But I firmly believe that any members of this committee, who would be derived from it and set up as a working committee, could well do the job we are expected to do now. It is not because the members are not qualified; it is that the set-up is not leading to a proper—

Mr. HADASZ: Mr. Chairman, I would like to bring up another topic at this time. In reading through the report of the committee now before us I notice that the term "qualified investigators" is used.

I would like to ask, first all, whether the committee has had the opportunity and the time to investigate the problem of those who are investigating drugs in Canada at the present time; whether, in your opinion, they are qualified and whether you have found some of them unqualified, as well as whom in the future you would consider as qualified.

Dr. BRIEN: The American people, in tackling this problem, went at it diametrically opposite to the way we did. Are you familiar with Mr. Celbrezze's material? Mr. Celbrezze is the secretary of health education and welfare. He caused to be promulgated on August 10th last a series of proposals that related to the handling of new drugs, in which he set forth in great detail the methods by which they would be investigated and the qualifications of the people who would do it, and so on. He then set up a period of sixty days for people who were interested in this field to comment.

As you know, this committee went to see the F.D.A., which is the equivalent of our F.D.D., in Washington, on December 6th and 7th last. We were told they had had, I think, some 300 or 400 written comments and we figured, thousands of verbal comments, which were noted with respect to these regulations. Actually, they were changed on many, many occasions. In connection with the original form that they came out in I am perfectly sure, if I had been asked to investigate drugs under their terms, I would have said I would have nothing to do with it. And this is precisely what happened in the United States. A great many people who are very interested in drug testing, because the regulations were so minute and pernickety, said they would give it up rather than carry on.

And now, we deliberately have not defined "qualified investigator" here, and your question is a very reasonable one. We have interviewed people in a variety of societies or bodies who are intimately concerned with this and who are well known to us. When it comes down to the people who first investigate new drugs there is not a large volume. Although I cannot tell you the precise figures, the initial introduction of drugs into humans is rarely done in this country; it is done much more often, I think, in Europe and in the United States. So, there is a certain body of information available at the time that drugs are brought here. As we pointed out this is one of the reasons why people who are very capable of doing this are not as interested in it as perhaps they might be and perhaps they should be. As well, we gave other reasons which are there.

Now, in the initial phase, the critical phase of this work, the people who are most apt to do it in this country are those who are working in large hospitals, either in very specialized clinical investigation units, which are in a good many of our larger hospitals, generally teaching ones, or in the veterans affairs hospitals—and these basically are teaching hospitals as well, or in other specialized units such as in the case of my own hospital, the Victoria Hospital in London, Ontario. For example, I might cite the cardiovascular unit there. It is a most highly specialized one. That would be an ideal setting for the type of work you are referring to because the people who would be doing it have the necessary knowledge and the facilities. It is very important that they must have the facilities to enable them to prosecute the work with reasonable controls and they must have help to enable them to carry it out.

The Canadian Society for Clinical Investigation which is a national organization, embraces most of the young men and women as members, and they participate in the earlier phases of this sort of work in this country. I do not think it is fair to say that it includes them all; however, it includes the vast majority. These people are working in settings which, I would say in the main, are conducive to satisfactory work, or at least it could be so made.

I do not think that we should attempt to legislate down to the nth degree either the qualifications or the precise details of how it will be accomplished; I am saying this after having discussed it with a variety of people who, I think, are in a position to comment intelligently on it. I think that we have to put in some very wide power wherein we state that we recommend that the minister be empowered to either suspend a trial, or stop them altogether if multiple

ones were going on if he felt that this was wise. This might be on the basis of either unexpected reactions that occurred from the material being tested on the one hand, or it might be because conceivably somebody got into the testing field who was a bit out of his depth. I do not think you can legislate in this connection; you cannot legislate whether a person is capable or not of doing it. We have suggested, as in the past, the manufacturers be allowed to select their own investigators. This is the way it has gone on in the past. In the main, I am sure they selected good ones, and I am sure I have no reason to doubt that they will do anything different in the future.

We have suggested, with closer supervision, they must do something which they have not done in the past, namely filing not only the names of the people and where they are going to carry on the work but also what we describe as an outline of the objectives of the trial rather than the precise details, because I think if you make somebody file the precise details and then do not allow him to waiver a bit this will stifle research. Having talked this over with our Canadian Society for Clinical Investigation, as well as with Dr. Farquharson, who was initially the professor of therapeutics, then the professor of medicine at the University of Toronto, and now President of the Medical Research Council—and I might say I have known Dr. Farquharson for many, many years—it is our feeling that it is reasonable and proper to leave things as they are, with these suggested changes we have made.

I have been speaking here entirely as an individual in the last few minutes and I think it would be very worthwhile to hear what my colleagues have to say about what I have just said.

Mr. HADASZ: Mr. Chairman, to pursue this question of mine, Dr. Brien has stated that most of the drugs have had preclinical or clinical testing outside of Canada.

Dr. BRIEN: Yes.

Mr. HADASZ: And once they come into Canada there probably is much less work to do on the drugs.

Dr. BRIEN: Yes.

Mr. HADASZ: And thalidomide is an example of this. I am wondering whether clinical testing would have been prolonged a little longer if it had been done in Canada, and if it had been prolonged much longer than it had been in this country this tragedy probably would not have occurred in Canada. In other words, do you think that the drug directorate should test all imported drugs, what tests should be done, whether they should be done all over again—clinical and preclinical testing—and for a longer period than it is done now.

Dr. BRIEN: I might give you an answer to it in this way. This is the thirtieth year that I have practiced and I saw the first case of breast involvement from digitalis this year. However, this is no reason for taking digitalis off the market. It is an unexpected side effect that I have just waited thirty years to see. I do not think that another test on any drug is going to stop you from getting into the problem possibly that thalidomide caused. The only test subject which will tell you the answers you want are people. What happens in the case of chimpanzees—from the chimpanzee or the orang-outang down to the amoeba—is no indication that the same thing will occur in a human being, and you can go on testing ad infinitum.

I will admit that it would be very unreasonable to attempt to give humans something that kills everything else that you give it to in any dose whatsoever. However, the point is that you cannot test safety completely in respect of any drug. I do not think that any degree of animal testing would have prevented the thalidomide tragedy. The only way such testing would have prevented it

would have been to delay its introduction until someone else got it, and that is all.

You cannot tell whether an aspirin which your wife takes for a headache will not do this except that it has not been reported.

Interestingly enough I looked at an essay the other day written by a twelve year old girl with her left foot. She is one of five patients in respect of whom I have managed to gather data who have classical thalidomide deformities. In this instance I was able to talk to the young lady's mother at some length about the drugs she took while she was carrying this child. She turned out to have a classical phocomelia, or thalidomide deformity. The mother admitted having taken on occasions aspirin for her headaches and milk of magnesia for her bowels. Do you think we should remove the two of those articles from the market?

Mr. HADASZ: Mr. Chairman, at page 34 of the committee's report the last paragraph states:

The committee feels that it would be highly desirable to require adequate clinical trials to be conducted in Canada before a new drug is released for sale in this country.

I wonder whether the chairman would care to explain what is meant by "adequate clinical trials"?

Dr. BRIEN: The reason we have included this paragraph is very simple.

As pointed out in the paragraph above, the directorate at times has had to release drugs, or has felt that it could not withhold reasonable compliance when what would appear satisfactory trials had been carried out particularly in the United States, in respect of which a telephone conversation is easily carried on and, to a lesser extent, in the United Kingdom where it is much more costly and more difficult to do so, and actually where there was no opportunity to talk to the individuals who carried out the clinical trials.

I am sure that Dr. Morrell might have a certain degree of reluctance if he had any doubt about tackling someone in the United States, and in some way he would call in one of us, for instance, if we were engaged in animal trials. He might ask us by telephone or request us to come to Ottawa to discuss the whole problem. We think it would be a good thing from a number of points of view to have such confirmation, but at this stage it is obvious that you cannot make this mandatory even though it might be desirable. We think this would be good in the interests of the various provisions concerned in respect of the making, distribution and use of drugs to have the drugs adequately studied here and also from the standpoint of attempting to minimize but not eliminate, because I think you cannot eliminate, all possible ill effects. I think it would be desirable to have animal trials carried on whenever it is possible in this country.

At least one way to do this, to make it more attractive, would be to get the materials at any early stage when people are more interested in them.

I can assure you that I have never given a drug to a patient and been, as far as I am aware, the only one or one of two people to have done it, or something of that sort. I have never initiated the first animal trial on a human subject. I have done this on a few occasions when certainly there were not many other people using it in this country, but I had data from the United States or from the United Kingdom or somewhere else before I undertook such a step.

It would be to our advantage to have individuals at early or late stages carry out this testing in Canada so that the food and drugs directorate could make contact with them and discuss these things much easier.

The CHAIRMAN: Excuse me, Mr. Nicholson. You have been waiting for a long time, I realize. We are discussing item number 7 in the index with reference to clinical trials in Canada. I wonder whether it would be in order to limit our remarks to that subject, and then go on to a different subject? You proceed Mr. Nicholson.

Mr. NICHOLSON: I would like to ask the committee chairman whether in the course of their research they found anything in the earlier stages of the testing of thalidomide in Germany or in England which indicated that it had this affect of killing cells or of deforming the new cells that were being born?

Dr. SELLERS: I am not aware of any information of that type.

On the other hand, much of this information is submitted by the manufacturer to the appropriate government agencies of the countries concerned and is not necessarily published. As far as I know the first report about the cellular defects was published perhaps six months ago.

Mr. NICHOLSON: There was nothing during the first three or four years of work that would indicate that special tests should be made in the case of pregnant women, or preceding that, in the case of pregnant animals?

Dr. SELLERS: As far as I am aware there was no indication that this would be advisable. As a matter of fact, the acute toxicity of thalidomide, as you may have heard, is extremely low so that at that time it would naturally be looked at, as perhaps an ideal hypnotic. As we know, this was quite long.

Mr. NICHOLSON: Yet as it turned out after two or three years of general administration and wide scope use in Germany and or in England hundreds of abnormalities occurred?

Dr. SELLERS: I think this was after five years.

Mr. NICHOLSON: Yes, after five years. Thank you.

Mr. HARLEY: Dr. Brien, I am wondering whether you think there would be any advantage in including in Canadian legislation a clause making it mandatory that a certain percentage of investigational work be done in Canada, particularly in view of the fact that the drug directorate may not have sufficient knowledge of investigations being done in the United States and other places. I ask this question particularly in regard to the last two paragraphs appearing on page 35 of your report.

Dr. BRIEN: We were very careful at this stage of our report to make sure that we did not write in something that was not capable of implementation.

I am perfectly sure that if it is gone about in the right way more clinical trials can be carried out in Canada. I am sure of this fact.

We have made certain recommendations and have discussed this whole problem with a great many individuals who are interested in this regard. I would have no compunction at all in requiring that some work be done in Canada in respect of certain things. That is not specifically what we have said here. It is all very well for one to legislate that clinical trials will be done in respect of this, that or the other for such and such a reason, but I would not advise you to make legislation unless you can carry it out and that is the reason this is as it is. I do not think we should write something down that is not capable of implementation.

Mr. VALADE: Dr. Brien, you mentioned on page 33 it is quite clear that it is difficult, if not impossible, to have adequate clinical trials of all new drugs carried out in Canada at the present time. Well, this seems to be a little in contradiction of the desire as expressed up to now.

Dr. BRIEN: Yes, but you must realize that the people who are capable and are doing them might not be interested in doing them and there is no means of making them do it. If you ask me if I am interested in testing this drug or

that drug, I might say no to seven out of ten or to ten out of ten, and you will find that with everyone else in this country. This is the reason that is there.

Mr. VALADE: I did not want to make any inference on your good judgment. I was just asking this question because at a preceding committee meeting I asked the same question of Dr. Morrell. I asked him if it was possible to have a test of drugs carried out here in Canada and at the same time to have the same drug released in this country. This is what prompted me to ask this question: if it is possible, you are looking into the future but this is not available right now?

Dr. BRIEN: No, you see, from the standpoint of accuracy—and we will just confine ourselves to the new drugs—whether many drugs are released here with no trials at all or with very limited trials in this country, I am not in a position to answer that and I am sure Dr. Morrell can. But there are relatively few where the main clinical trials might be called perfectly adequate without reference to any that were done anywhere else. This implies that in a minimum of two different places which have no communication with each other, other than the fact that they will intercommunicate if they get into trouble right away, this is carried out very thoroughly. I am sure that the number is not great and I was not being belligerent at all when I said that I might not be interested in seven out of ten or even ten out of a particular group of ten. I think that for reasons we have given, that aspect of the practice of medicine, the actual use of medicine and how it operates, is much less interesting to a good many doctors than the mechanics of what makes you get into the trouble you are in. It is much less dramatic and so on, but I think it can be made more challenging and more interesting if we go about it the right way.

One thing that has bothered some people in clinical testing is the fact that they have dealt theoretically with a drug company. Obviously, if you are going to test the product, you must deal with it directly to get the materials to test. Sometimes they have been subsidized to varying degrees to help carry the work out. In the United States this has become a much bigger procedure of course than in this country, and some people have backed out because they began to wonder which was the cart and which the horse, the drug company or the university. We are interested in promoting more clinical trials. I think we do too few—I will state that right away. If we can set up some sort of a mechanism whereby there is a buffer committee, or whatever you want to call it, so that if we need aid—and we will for some things,—we can get it; then there is no doubt about it and the business can be carried out more or less on a basis where you can get grants for doing pieces of research. In this case the research would involve the use or the wisdom of using a drug. I think that it can be expanded but it is a thing that will grow slowly.

Mr. VALADE: During your study, Dr. Brien, have you found that in the United States there are some specialized organizations, purely outside of government control, that are conducting some clinical tests and are paid by pharmaceutical firms to do this research?

Dr. BRIEN: We did not specifically go into this, but I can tell you that there are. Dr. Sellers could probably answer this much more accurately than I. There are organizations, or in other words testing companies or corporations, that do this sort of work independently. I know that such facilities exist in the United States.

Dr. SELLERS: This is certainly true with regard to pre-clinical testing and chemical tests of a variety of sorts, but apart from university organizations or hospital organizations I am not familiar with any corporations that carry out clinical testing.

Mr. VALADE: I just have two more questions. I am sorry if I am taking up too much time of the committee.

Dr. Brien or Dr. Dufresne could possibly answer this question. Can a new drug be released on the market during an investigation? Is this happening? When a new drug is being investigated is it possible that this drug could be released for consumption on the market during the investigation?

Dr. SELLERS: I think the answer to this is that this is quite customary but not exactly in the way I believe you meant your question. The situation is this: if a pharmaceutical manufacturer acquires enough data, both clinical and pre-clinical, to submit a new drug submission to the appropriate authority and the authority agrees that the drug is acceptable for release, it is quite likely that clinical investigations, and perhaps pre-clinical investigations that have originated previously, will be carried on to their completion. So, in this situation you would have a drug released for sale and pre-existing clinical investigations carried on perhaps for several years after the drug is on the market.

Mr. VALADE: The purport of my question was to make the position that thalidomide was investigated and that these secondary effects were discovered after further and more acute investigations were made of the drug; but it certainly must have sustained some clinical testing before it went on the market without showing these effects which came out later on.

Dr. SELLERS: It is common practice in clinical investigation units to compare one drug with another even 50 years after either drug has been on the market in order to compare their relative effectiveness and, of course, the incidence of side effects or toxic effects. This, however, probably does not have anything to do with the interim use of a drug on the market as such. This goes on all the time. As I understand it, this is the type of study which suggested that thalidomide might have serious effects that had not been recognized earlier.

Mr. VALADE: My last question is this: Would your committee feel that there is a certain minimum of time required for clinical investigation of a drug? By this I mean is there a minimum amount of time in respect of safety for investigation of a drug before it is put on the market? I am talking about a potent drug now.

Dr. SELLERS: Mr. Chairman, my answer to this is that it probably depends a great deal on the particular drug and the intended use. If it is a drug that is to be given over a long period, the long term would necessitate, or suggest to me, that it be examined over a long period. Whereas, if it is a substance that is likely to be used once or twice for a very brief period for a specific purpose, perhaps for curing a specific infected organism, I should think in this case, if it was of great value, that one should be reasonably satisfied in testing such a material for a much shorter period of time. I think that your question has brought up a very important point; that it is almost impossible to lay out a precise pattern to which all drugs must conform in order to prove themselves to be of value therapeutically. The intended use and the duration of the intended use also are most important.

Mr. VALADE: Thank you.

Mr. NICHOLSON: Mr. Chairman, I would like to draw attention to page 47 of the report. Here they are dealing with regulation C.01.301:

With respect to this section, the committee is of the opinion that the ultimate effectiveness and safety of a 'new' drug can be determined only by its use by a body of practitioners.

That is clinical testing. They are out of the laboratory and into the field of clinical testing.

Dr. BRIEN: On to usage. This goes on much beyond that, or it might. It might go on for years.

Mr. NICHOLSON: I continue:

—over a sufficiently long period of time to enable qualified persons to make such an evaluation from accumulated data.

There you are talking about practitioners and they would be limited to doctors, dentists and veterinary surgeons.

Dr. BRIEN: Veterinary physicians.

Mr. NICHOLSON: You are away from the research chemist and manufacturing chemists. You have it in a clinical stage at that time.

Dr. BRIEN: Yes; it is on the market, it is out. This is the sort of thing; it is indeterminate.

Mr. MITCHELL: I would like to go back to number 6 and included with number 6 I would like to comment on number 10 which is in the second category.

The CHAIRMAN: Would you like to allow Dr. Harley and Dr. Rynard to ask questions first on clinical testing?

Mr. HARLEY: On page 36 under number 5 a point is brought up which we have touched on before. The last sentence says:

—have been investigated adequately from the point of view of safety and effectiveness.

At the present time I understand the drug company does not have to prove a drug is effective. In other words, a drug has never been turned down in Canada because of some question as to its effectiveness. Would you comment on this?

Dr. BRIEN: Yes. I gather from speaking to Dr. Morrell that there might be times when he would withhold notice of compliance if the drug were completely inert; and he would do that on the basis, I think, that it was probably fragmentarily advertised and purported to do something it could not do. It is quite true the way our legislation is written—and this goes back to Dr. Morrell's original address which is an excellent exposition on the construction of that—that you got approval if you did certain things and did not do certain things; but it said nothing about whether it was effective or not. As a committee we feel that this should be added to it. It is not in our regulations and we think it would be highly desirable to ask that reasonable evidence be produced that the drug does what it is supposed to do, and that it is as safe as we can make it in the process.

Mr. RYNARD: Dr. Harley has covered the main part of my question. I was going to ask this: You feel it is still the main responsibility of the manufacturer to produce a clinically well tested drug?

Dr. BRIEN: Yes, sir; I do—we do.

Mr. MARCOUX: Dr. Brien, would you say, because most of the drug companies are world-wide companies and clinical investigations have been made in other countries, that would impair the interest of clinical workers here in doing some clinical research that has been done elsewhere? If so, would it be advisable that the clinical investigation in respect of drugs coming from other companies be conducted at the same time here in Canada, because we know those drugs will come on the market here in Canada, maybe after one or two years.

Dr. BRIEN: The answer to both questions is very simple; yes.

Mr. HADASZ: I have one last question on clinical testing. Has the committee in this report had an opportunity to find out whether pharmaceutical companies are studying the possibility of doing any tests for teratogenicity?

Dr. BRIEN: We did not make a specific study of that phase, but I think it would be very fair to say that we know that at least certain of them are interested in it. We know that two other groups are very interested in it, and they are the pediatric society, the Canadian society, the Canadian pediatric society on the one hand, and also the pharmacological society of Canada. They are very interested in that aspect of it; and the pharmacological society of Canada numbers among its members people who are in industry at the present time and people who are basically in universities.

I am sure that I cannot give you exactly what you want to know, but I am sure that they are interested in it; and I am perfectly satisfied that certain tests are being made, but I cannot give you an idea of the volume, and I cannot answer. Can you answer, Dr. Sellers?

Dr. SELLERS: From discussion with the medical directors and pharmacologists in the pharmaceutical industry I can certainly say that these people are highly interested, and that they are carrying out work actively in this field, but this is hearsay.

Mr. NICHOLSON: I have another question: is it not a fact, Dr. Brien, that most of these new drugs are put on the market by one or other of the large international drug manufacturing firms?

Dr. BRIEN: I think most of them are, but again I cannot give you precise figures.

Mr. NICHOLSON: If that is so, and if a manufacturer—a reputable manufacturer—has made complete tests either in the United States, Great Britain, Germany, or Switzerland, he is not going to repeat those same tests in other countries. We would never get those tests here, would we?

Dr. BRIEN: From conversations I have had with the pharmaceutical manufacturers themselves—we met them in their corporate capacity, their association—and in talking to them and to their medical directors on multiple occasions, and far out at the periphery, the people who come to see me, and the other doctors, are very interested to get clinical testing done in Canada.

Mr. NICHOLSON: Why would they? They are in the business of making money, and if they made a series of tests with which they were satisfied, let us say, in England, the United States, or somewhere, why would they repeat them in Canada?

Dr. BRIEN: I think the answer to that is that they might need it; on some grounds, it might be a bother, but on the other hand it is very sound business to be able to say that this drug has been tested in Canada—or any other country where you are trying to sell it.

Mr. NICHOLSON: Might it not be better for us to be putting more details in the hands of Dr. Morrell and to have them make their tests here? Is there any merit in that? Is it necessary that they duplicate or triplicate those tests?

Dr. BRIEN: Yes, yes; I think there are very sound reasons to have tests made in Canada. For one thing, the test in its entirety, or the testers may be seen by Dr. Morrell and interviewed on the one hand, and also there is no reason at all, why, if the facilities are here—and we have the facilities—why an international company would not be perfectly interested in having tests carried out in Canada or in the United States or Switzerland, or wherever else you like simultaneously, and I am sure that they would do this. But I do not think you should try to make this mandatory. I am sure that is right. You can

give Dr. Morrell the weapons, but you will end up having no drugs until you get the mechanics going.

Mr. NICHOLSON: I am not suggesting that the food and drug branch here would be testing, but they could refer it to McGill or the university of British Columbia, or somebody else to make these tests.

Dr. BRIEN: That is the point I am trying to put over. If we should set up adequate testing of the 180 odd products, or others and say that they will be included in the sense of the definition in that book, since there are alterations which make them new, if we were to test them thoroughly, and in the way that anybody would want them done in this country, I think you would set that up to have this carried out universally in one area or two, but not beyond three or four.

Mr. NICHOLSON: If complete tests have been made, let us say, in the United States, why should we duplicate those tests in Canada?

Dr. BRIEN: One reason—and I have the document here—is that it gives the final form of these rather onerous requirements which must be filled out by the testers, and one reason for this is that they have reason—and I would ask that this be dealt with kindly by the newspapers—sometimes to doubt the veracity of data submitted. I won't go beyond that.

Mr. NICHOLSON: That all goes back to the original point I made that it must be a reputable firm, and if the reputable firms have continued the practice over the years, it would not take long for an intelligent person to suspect something, and that sort of thing circles around very quickly; but if you know of a reputable firm which does this job well, let us say, in England or Germany, then there is no necessity for them to test it here. Would it not be better to have Dr. Morrell go to England or go to Germany to make sure that the tests have been done, and not have to duplicate those tests, with the vast expenditure of money. Is it necessary, in your opinion?

Dr. BRIEN: Are you speaking of this in terms of Dr. Morrell's building up a testing corporation?—I want to get this straight,—Or are you envisaging the testing being done in large hospital centres by a group of interested individuals or by the government, such as the national institute of health? What are you talking about?

Mr. NICHOLSON: I am talking about thalidomide. I presume it has been made in England, and it has been well tested in Germany and in England; and after a year or two of testing it is put on the market. This was done at the expense of the manufacturer. The manufacturer has satisfied the food and drug authorities in his own country and I presume he has satisfied our people here. Are you suggesting that we should duplicate that testing at the expense of the manufacturer again in Canada?

Dr. BRIEN: Not necessarily. What I am saying is that when he sets up testing, or when Dr. Morrell looks into this testing, or the food and drug authorities test in Washington, they are not taking a single test, they are taking two or more; that it might cost them considerably less to do some of that in this country rather than in the United States.

Mr. NICHOLSON: That is the other phase of it. I would like to see more of this work being done in Canada.

Dr. BRIEN: That is what we are trying to get at. However, I do not think we can do it by legislation right now because you cannot suddenly accomplish it all at once as we have not the facilities.

Mr. NICHOLSON: If the manufacturer which manufactures the drug eventually contemplates this drug being sold in Canada, why cannot he do some of that initial testing here rather than in Germany or somewhere else?

Dr. BRIEN: There is no reason in the world why we cannot if we can get the co-operation of the people to do it and also obtain people who are capable of doing it.

The CHAIRMAN: Paraphrasing one thing, you do not want duplication but clinical testing in the first instance done in Canada in conjunction with other countries.

Dr. BRIEN: It would be desirable if we could do some of it at the same time, as it is being done in three other places. I am sure that the F.D.D. here would be happier, in dealing with some of the tests, where they could make contact with the people who did them quite easily and where obviously they cannot if they are distant.

Mr. NICHOLSON: I had one further question along the same lines. Does the geographical and climatic condition factor have to be taken into consideration in connection with clinical testing? Might there be some drugs that would need special testing in Canada or in the northern atmosphere as distinct from the tropics or subtropics?

Dr. SELLERS: The activity of drugs is influenced by the environmental conditions or the extremes of environmental conditions and from that point of view it is easy to visualize, depending on the intended use of the substance, that this might be very desirable.

Mr. NICHOLSON: Is that not a broad category of division? We might be testing in that field rather than in another field, and if the drug is likely to be used in the tropics or subtropics, could there not be some division of this testing, and then let us test the drugs most likely to be used in this country. When you get into the tropics and subtropics you are dealing with forms of life like the amoeba, which does not bother you up here.

Dr. BRIEN: In principle, I follow your question and I agree with your line of reasoning. But I think it is impossible to spell out a pattern that will fit any instance that might arise.

I would like to add one comment to your previous question with respect to the necessity of testing drugs in Canada. I would not say it was a necessity but I do think there are good reasons for it being desirable, one being that our experience with the drug would accumulate in this country and our desire would not only be to make it acceptable to the F.D.D., but we would become experienced with its toxic properties, if any, and the side effects. If knowledge of this is readily available in this country to the F.D.D., or other persons using the drug in the field, it is a distinct advantage. And along your same line of reasoning, the doing of clinical testing of new drugs in conjunction with those done in other countries tends to make our pharmaceutical industry a more progressive one, and this is something which I think should be encouraged.

Mr. NICHOLSON: Thank you very much. You have given a very helpful and a very important answer to my question.

Mr. MITCHELL: As we are still on the clinical question, I would like to ask Dr. Morrell if it is not fairly common practice with the director at present to accept the records of clinical testing done in laboratories or other places by reputable firms manufacturing pharmaceutical supplies, as your specific necessary stamp of approval. Do you not take a number of their records as your symbol of having been correctly controlled and tested?

Dr. MORRELL: I am not sure that I really understand the question. However, our new drug submissions, which is the material that the manufacturer has collected of all the knowledge that is available about the new drug from all sides—and this, of course, is obtained in his laboratories or

in laboratories that he has employed to do the work, or by clinicians that he has managed to get interested in it—comes to us and we do accept their work. We think it is complete. You do not have to do each piece of work yourself; you get to the point eventually that you know what to look for. I think you can make a pretty good assessment as to whether the experiment or the trial or the information supplied is adequate or adequately obtained. But we, of course, do know from experience over the years what companies have the facilities and the capabilities of the personnel and what ones do use them to the best advantage. We can see it in their submissions. They probably give us on the whole much less difficulty than others.

I said the other day that I think that the majority—that is more than half—of these submissions that come to us we consider to be incomplete in some way, and so there is correspondence on them.

I do not know whether or not I have answered your question, Mr. Mitchell.

Mr. MITCHELL: I think you have. In other words, you do take in the introduction of new drugs by reputable manufacturing firms; you do take their records of their clinical testing to satisfy your directorate.

Dr. MORRELL: Yes, of course.

Mr. RYNARD: Mr. Brien, I wonder whether it is right to assume—and I think it is probable—that in the case of most of the drugs that come in from reputable manufacturers the obvious reactions have been noted and definitely those are the reactions that you are going to get within a few months or so. And I am wondering if by our clinical trials—and in the case of thalidomide it was three or four years before those things started to show up—we would be setting research back on some of those drugs, if we took the attitude that we have to try them long enough before we see these reactions. Now, I do not know what the score is on the immediate reactions of drugs, the mid reactions and the late reactions but I know myself—and I was in practice quite a few years—that it was a long time before I learned certain drugs were dangerous and that the odd person would react to them. I am wondering, if we took the hard and fast rule that we are going to test these things, whether we are not going to set research back, in which we are all so greatly interested.

Dr. BRIEN: Well, research with respect to the drugs will be prosecuted somewhere. It is our hope that more of it will be done in Canada. That is the first thing.

Your observation that it takes years to find out that many things are toxic, of course, is perfectly true and I feel it will continue to be true. Some of the more obvious reactions become apparent in acute and perhaps sub-acute toxicity settings. I think these things are found out by the animal tests. In respect of certain things that matter a great deal it is unfortunate that we are just finding out how chronic this can be. The people doing the testing in this regard are acting I am sure in the best of faith.

The CHAIRMAN: Gentlemen, I hope that we will be able to adjourn at 12:15 and come back after Orders of the Day so that we can conclude our questions of these three doctors this afternoon. They are very, very busy and have many other commitments.

Mr. VALADE: Dr. Brien, I should like to ask you just one short question in regard to that portion of your report which appears at page 36, paragraph 5. If I understand you correctly you are recommending that the manufacturers arrange to pay for clinical trials in respect of a new drug, and then you in part state:

—it is in the public interest that trials be conducted, and be conducted in an adequate manner.

Is it your suggestion that the manufacturer set up its own clinical trial and research and that another organization parallel to this one would be established to complement those trials and research work?

Dr. BRIEN: No. What we envisage here, Mr. Valade, first of all is that the manufacturers do a great deal or most of the pre-clinical animal work as well as pharmacological or chemical work itself. When the research reaches the stage that it becomes reasonable to give a certain substance to humans, then the manufacturer may approach doctors who they feel will both be interested in and capable of carrying out trials to assist in the evaluation of the drug.

Mr. VALADE: Are you suggesting that a government body be established?

Dr. BRIEN: Oh, no.

Mr. VALADE: The last part of the same paragraph states in part:

In exploring the best means of encouraging and supporting clinical trials, the medical research council should be requested to participate, and its president, Dr. R. F. Farquharson, has expressed a personal interest in so doing.

I should like to understand exactly what that recommendation covers, Dr. Brien.

Dr. BRIEN: Actually what that covers is the situation that our conversations from time to time with both the manufacturing association itself and the businessmen who run the companies as well as the medical directors who help them to run them indicate that some means should be worked out to encourage the carrying on of clinical trials in this country. It so happens that Dr. Farquharson is one of the very senior and nationally respected figures in this particular field. We were talking to him as an individual rather than as the president of the medical research council, and, although it might be interesting in certain aspects, it was felt that if we could get people interested in clinical trials and clinical investigations, it would be of advantage. It was felt by Dr. Farquharson and other doctors who represent the different firms that some plans could be formulated to make it easier to get these tests carried out.

Mr. VALADE: This to me seems to be invidious. Perhaps I do not understand exactly what the object of this memorandum here is. In what form will this body operate? Is it the recommendation that an independent privately organized group go into research?

Dr. BRIEN: No; that it set up a means by which it has been agreed or suggested to some extent at least, or to a large extent, that the manufacturers should pay for the testing of their products. In other words, get this done in a fashion that removes the direct connection between doctors and the manufacturer. We would interpose this body which had doctors and manufacturers on it and the doctors who work for manufacturers with some representatives of the medical research council to decide whether such a project was reasonable and whether it was worthy of support, and if so, to what extent, and look into the feasibility of determining how far this sort of program could be developed in this country.

Mr. VALADE: Thank you.

The CHAIRMAN: Gentlemen, it is now 13 minutes after 12 and we had decided to adjourn about 12.15. I wonder if it is in order to adjourn at this stage until 3.30 or whenever the Orders of the Day finish. I also wonder whether, when we do come back, we could stick to specific subjects as we have been doing so that we can expedite this.

Mr. VALADE: I propose we adjourn.

Mr. NICHOLSON: Mr. Chairman, at our last meeting I put forward the names of three possible witnesses who I suggested might be called in addition to the ones who have been called. One was Dr. George Ling. The others were Dr. Matthews and Dean Mervyn Huston of the university of New Brunswick. I am informed that Dean Huston is in Ottawa today and will be here for a day or two. I am wondering whether we should take advantage of his presence. It may be possible that he could stay over until tomorrow or Thursday and in that way we might take advantage of having him while he is here.

The CHAIRMAN: If that is the wish of the committee I would be happy to have the clerk or myself get in contact with this gentleman. It has been suggested that perhaps Dr. Morrell who knows where he is might speak to him in order to see if he could appear. I may point out that I believe from 3.30 this afternoon until 5.30 we will have a very full job in getting over this brief. I would not want to be presumptuous in telling this gentleman that he would be heard tomorrow.

Mr. NICHOLSON: I would prefer to have him on Thursday if he could be here.

The CHAIRMAN: Would you leave it with me to ascertain what we should do? We will adjourn until 3.30 p.m.

AFTERNOON SITTING

TUESDAY, February 5, 1963.

The CHAIRMAN: Gentlemen I see a quorum.

To expedite matters in order to get things off to a good start I think we should discuss sections 4 and 5 indicated in the index, concepts of new drug control and the present procedures of the department with respect to new drugs.

Dr. Sellers I think will deal with these two points as they are within his jurisdiction. I would ask him whether he wishes to say anything about these points in general, and then perhaps we could confine our remarks and questions to these points so that Dr. Sellers can keep other commitments he has made. Dr. Brien has stated that he will be happy to stay until his train leaves tonight for Toronto, if it meets our convenience.

Perhaps we could work out the details of our further meetings this afternoon in accordance with that suggestion. I hope that we will be able to complete our questions of Dr. Sellers so that he can leave as soon as possible.

Dr. SELLERS: Mr. Chairman, the only points that I wish to emphasize are two in number. Firstly, it is impossible to make any drug completely safe. There is a risk associated with the use of any drug or chemical. Therefore, the objective of any legislation is to minimize the risk, not to eliminate it, because this is impossible.

The second point I should like to make is that the introduction of new drugs I think is in the public interest, and our committee does feel it is in the public interest. Therefore, this is something that in general should be encouraged rather than unduly restricted.

To strike a nice balance between minimizing the risks yet restricting the introduction of new drugs to a minimum is a task that the government faces and, in general, I think that the procedures that have been followed are satisfactory in concept and have in general fulfilled the objectives that I have described.

That really is all I would like to say as to the points to be emphasized in respect of this section.

The CHAIRMAN: Gentlemen, perhaps we could confine our questions to those two sections, which I am sure you have read.

Mr. HARLEY: Dr. Sellers, on page 10, in the first paragraph, the last sentence states:

Some sort of literature review and information retrieval section seem to be necessary.

Could you elaborate as to how you envisage that would work and tell us what the thoughts of the committee would be in that regard?

Dr. SELLERS: I think that is actually a quotation from Dr. Morrell. Whether he would rather speak to his own suggestion or not I do not know. I can give you the practical details of what that means.

Mr. HARLEY: Did the committee particularly consider this aspect of the suggestion?

Dr. SELLERS: The committee considered the importance of a continuing follow-up on drugs, and the term used was "surveillance of drugs" not only during the time they are first undergoing clinical investigation but after notice of compliance has been issued and the drugs are on the market generally. By "surveillance" we mean the reporting of adverse reactions to the drug by physicians using the drug, to a central authority which we would assume would be within the food and drug directorate. We did not feel that it was possible to give a complete clearance to a drug and from that point on say that it is without risk.

Mr. HARLEY: Would you like to comment further in that regard, Dr. Morrell?

Dr. MORRELL: I certainly agree, Mr. Chairman, that we need to have some group of individuals charged with the surveillance of drugs on the market. At the present I think in our organization this is not the job or at least sole job of any particular person. We have been cutting our coat to suit our cloth, and to review literature, where these reports have been published, has been quite a task. I think that the United States food and drug administration has such a group in their bureau of medicine. Perhaps Dr. Brien knows how many individuals they employ.

Dr. BRIEN: I think they have three individuals in this regard at the moment.

Dr. MORRELL: Perhaps I could ask Dr. Brien whether they are literature scientists?

Dr. BRIEN: I cannot give you precise details, but I can say that they are physicians.

Dr. MORRELL: They have, somewhere in the food and drug administration, literature scientists reviewing medical literature, and I am told, and this is purely hearsay, that they review about 400 medical journals, or journals which contain articles that are certainly closely related to the medical sciences. This is quite a job.

When I made the statement that we need some sort of a literature review and information retrieval system I meant that we should have a group which is reviewing reports that come in, in journals and information that can be obtained from other sources. After this type of review the result should be brought to the attention of those individuals who are responsible for taking action.

We now have very little response directly from doctors in Canada reporting untoward reactions. We have sent out some letters to the doctors in Canada. I think the first letter was sent out by Dr. MacDougall a number of years ago when he was with our administration. We received very few replies.

I have sent out two letters in the last year. If letters were sent out to 17,000 individuals, we perhaps received 17 replies, or something of that order.

What I feel we need is some special group whose main function would be to review this information and keep us up to date as to what is being done. There have been many suggestions, which I do not need to go into now, regarding other ways of receiving information in respect of adverse reactions to drugs new and old.

The CHAIRMAN: I should like to direct a question for the purposes of clarification, Dr. Morrell. Do you envisage this as a department or group of people within your department, as an example, who would write all the doctors across the country asking for information regarding the side effects of thalidomide, rather than requiring the manufacturers to do this as has been the practice in the past?

Dr. MORRELL: It is a new policy, as far as I am aware, that the government should undertake to do this. I have felt that the law places that responsibility upon the manufacturers. I think that is a good principle, and still feel that manufacturers should have this responsibility, realize and accept it. However, things are changing and it may be that we will have to work more closely with the practicing physicians to obtain information directly.

The CHAIRMAN: Thank you.

Dr. SELLERS: Mr. Chairman, I think this is an area in which international cooperation might prove fruitful. I know that the food and drug administration is anxious to cooperate with the F.D.D. In this respect and I am lead to believe that authorities in the United Kingdom and other countries would like to see a greater exchange of information of this sort presumably through WHO.

The CHAIRMAN: A member of the world health organization I believe will appear before this committee toward the end of the month to discuss this problem.

Mr. NICHOLSON: I was wondering, Dr. Sellers, whether you have any suggestions to offer to the committee on getting favourable reactions to new drugs, not adverse reactions but some new side angle. I am thinking, for instance, of the drug dramamine. I mentioned it to Dr. Morrell the other day. As I understand it, dramamine—and I got it from one of the doctors who was in on the experimental work—was discovered on a train moving between Baltimore and Washington. They found that a person got rid of train sickness. They allocated it to the largest liner afloat with satisfactory results. This was 15 or 16 years ago. Have you any suggestions as to how we can follow up favourable reactions as well as adverse reactions?

Dr. SELLERS: Mr. Chairman, on the whole I would say this was covered reasonably well in the normal course of events, and that everyone, whether they be a manufacturer or a practitioner, is anxious to see that a drug that is administered is effective. If other favourable effects are observed by chance, I think it is most unlikely that this sort of information would remain buried. Indeed, there are many other examples of favourable effects that were not contemplated before the introduction of the drug.

Mr. NICHOLSON: Excuse me, Dr. Sellers, but Dr. Morrell did point out that of course the manufacturer would be interested if that were reported to him, and he also referred to the fact that you get great help from some particular

doctor who would pick it up and write it up in one of your professional magazines. However, are there not other ways of doing this?

Dr. SELLERS: In my opinion it is unlikely that any significant favourable effect would not be spread.

Mr. NICHOLSON: That it would not be drawn to the attention of your profession, I understand.

Mr. VALADE: Dr. Sellers, my worry is that before all these recommendations and considerations are implemented we may still go into a great deal of speculation and a lot of situations that we hope will never occur, but, as I said, there is no absolutism in drugs or in the safety of drugs, and I was wondering whether you had studied the possibility of working in cooperation with established medical and paramedical corporations with a view to elaborating this procedure that you are now envisaging. I am speaking now about informing for instance the colleges of pharmacists across the country or the medical profession throughout this country and trying to form a kind of national information centre with a view to working out some operative body that would implement these recommendations.

Dr. SELLERS: In the matter of obtaining more reports on adverse reactions, I think that the mechanism you suggest of making a definite effort through professional journals and through professional associations should be followed. As Dr. Morrell said, the response to direct mailed requests for reports on adverse reactions has been poor, but if it is possible to gain some reward from a tragic circumstance such as thalidomide, I think perhaps it might be said that the general public, as well as the interested professionals, are much more conscious now of an expected toxicity than they were eighteen months ago. I think this should be used to encourage more complete reporting. Is that what you had in mind?

Mr. VALADE: Yes. In respect of the recommendations you made I see that this committee is an idea which you studied with Dr. Brien and Dr. Dufresne. It is a plan that you are submitting for consideration for the future establishment of clinical controlled tests. It will be another body entirely different from what is actually existing. Is that right?

Dr. SELLERS: You are referring now to the standing committee or a working committee that we were discussing this morning?

Mr. VALADE: Yes.

Dr. SELLERS: I will be glad to add a few more comments about this subject. One of the real difficulties that the food and drug directorate has had is a lack of staff, and one of the real difficulties that they will have in implementing the recommendations that have been made is recruiting staff of a suitable type. This bears directly on the question which you asked me. In the recommendations we concurred with the request for staff made by Dr. Morrell, which, I believe, mentions 15 pharmacologists. Now, the entire output of professional pharmacologists in Canada at the moment—and I am using a doctorate as a criterion of professional status—is probably two or three per year. In other words, the recommendations that we have made suggest that the entire output of professional pharmacologists in this country will be recruited by the food and drug directorate. This is most unlikely because of such things as salaries, the competition from industry for the same individual and the competition from universities for the same individuals. In some respects universities and industry are more attractive to professional men of this type than is the food and drug directorate. I have used the pharmacologist as an example because the point I am making is the difficulty in recruiting enough individuals to implement the other minor recommendations, the recommendations which our committee has made to the Minister of National Health and Welfare. This

is a real problem and it points out the need to enlist the services of groups of individuals who may be employed by universities or elsewhere to be used at the moment as a source of quick advice for the food and drug directorate, at least until additional capable staff has been recruited. As I suggested, recruiting this number of professionally trained staff is no mean task. I regret to say that I do not think that the food and drug directorate will be able to recruit this number even within the time period of three years mentioned in the report. If they did, I think they would be doing extremely well.

The CHAIRMAN: In other words, you say there are three of these people per year who graduate and that we would be lucky if after three years we could get the number of people required. Who else would do the job other than having the food and drug directorate get these professional people or groups? Are there any other people below the doctorate level who would fill in the gap?

Dr. SELLERS: Well, this is an excellent and reasonable question. I think it would be most desirable to recruit persons with a doctorate, either Ph.D. or M.D., with special pharmacological training. This would mean you would expect to recruit from outside this country, and the source of supply is not nearly as good as it was a few years ago. There is the same demand in the United States; there is a similar demand in Europe. Therefore, it is unlikely that we are going to get very many individuals with this level of training. The only solution that is possible is to take persons with less training, or to institute training programs in order to train these employees who are on your staff. This is easier said than done. The making of recommendations that require services of individuals with specialized training is much easier actually than implementing the recommendations. I think it would not be unreasonable for this committee to give some consideration to the training of additional individuals in pharmacology and in perhaps clinical investigation so that these individuals would become available. At the moment as Dr. Brien said earlier there just are not enough individuals to go around.

Mr. ENNS: Would a program of fellowships tend to increase the output of the qualified person which is required?

Dr. SELLERS: To some extent; this would certainly help. The problem, however, is even greater than that. The amount of laboratory space that is available for this type of work at the universities and hospitals has become crowded because of additional students who are entering the existing schools; and the establishment of new medical schools with basic science departments along with them has not been as fast as it probably would have to be to meet the requirement for the basic medical scientist as well as the acknowledged requirement for the future.

The CHAIRMAN: Dr. Cameron indicated he might like to add something.

Dr. G. D. W. CAMERON (*Deputy Minister of National Health*): Mr. Chairman, in the department we have established a policy of sending members of the staff away for training. It occurs to me that the evidence now may be touching on a special situation where this technique would be of great value; that is to say that we would recruit to our staff people below the doctorate degree, young people with promise of advancement, and they could be given post-graduate training from the department. This is established practice and I merely mention it to remind members of the committee that this is a possibility.

Mr. NICHOLSON: Dr. Cameron has probably answered my problem. I take it, Dr. Sellers, that you do not have to be a graduate in medicine to do this work of which you speak; it is preferable but it is not necessary.

Dr. SELLERS: Yes. I think you have to separate the clinical and pharmacology which is carried out with patients and the laboratory investigations in

which an M.D. may be desirable but is certainly not necessary. So, both types of individuals are interchangeable to some extent.

Mr. NICHOLSON: If you had some person who has a good grounding and a special interest in science, even though he does not have the medical knowledge would he not fit into this slot under proper supervision?

Dr. SELLERS: Yes, sir. This is the usual course followed by someone who wants to take a doctorate of philosophy in pharmacology or in one of the other basic sciences. They enter from an honours science degree, biology or some other similar field, and spend three to five years obtaining a doctorate at which time one might expect competency to carry on independent work.

Mr. HADASZ: To follow the same line of thought, on page 32, the last paragraph reads:

The committee further recommends to the minister that remuneration of the personnel be commensurate with the qualifications required...

Did the committee in its investigation meet with any complaints that the remuneration is insufficient for the job they are doing or should be doing, or that the remuneration is insufficient to attract these men with the qualifications we are looking for.

Dr. SELLERS: Mr. Chairman, the committee did not inquire into this aspect with specific individuals. I certainly am not the person to direct this question to for specific information. I do know the range of salaries that are paid by industry, by universities and the federal government for this type of position. The federal government's range of salaries is certainly not among the two highest.

Mr. HADASZ: In other words, in the opinion of the committee, perhaps in order to attract the personnel the salary ranges should be increased.

Dr. SELLERS: I think that this is almost necessary with the competitive situation which I have outlined in this particular field.

Mr. VALADE: Surely it is not only a question of salaries. It has been mentioned before that the industries are taking most of these people in their own services, and you have shown there is a lack of these people even in industries themselves. It is not a matter of salary. I think most of these people—I do not want to have people laugh—are educated men. Although we feel it might be a question of salary, it is only if we can get the men. The question is not salary at the moment, I think, but the men for the job. I think this is what should concern us more than the salary at the present time, if we cannot get the supply of talent we require.

Dr. SELLERS: This is quite right. Salary is certainly not everything. In addition to salary there is the question of conditions of service and the backing or the approbation of one's peers which is most important. It is something that I think the food and drug directorate deserves more of from its peers.

Mr. FAIRWEATHER: I have been interested in what to me as an observer seems to be sort of the national aspect or what might be a world-wide responsibility for research. Perhaps in 100 countries of the world committees such as this are not meeting, but might very well be meeting. Is there some aspect of this work that could take place in a sort of world health organization, say a clearing house of testing information and research?

It seems to me there is not anything very national about research. Are all the countries of the world trying to recruit these specialists? If so, might the solution be found through WHO?

Dr. SELLERS: Well, there are certainly many aspects of this which are of international significance and are not directly concerned in the introduction

of a new product. The first thing that is of national interest is: what are the reasons that congenital defects develop from the use of a certain drug; there are very many, many fundamental problems of toxicology which extend far beyond the introduction of one new drug or the interest of one country. I think an exchange of information in this field is desirable, and this is going on in WHO, as well as among the national authorities in most of the countries in western Europe and North America. The mechanisms are present. Again, I think it is the sort of thing that we should have in Canada.

Mr. FAIRWEATHER: In connection with the reading of scientific journals, surely there are not readers in every country of the world. Is there an area for a clearing house for what people have been saying in learned journals throughout the world. Is that now an area where you think something could be done?

Dr. SELLERS: This is almost a field of its own; it extends far beyond the drug field in the inter-communication of scientific ideas. The one aspect we are concerned with here specifically, I think, is covered with a sort of adverse reporting coordination centre which, by using an appropriate indexing system, could exchange specific information on toxicity of drugs internationally reasonably easily. If you extend this into the whole field of communication of scientific ideas I feel unable to give you the current state of this. There is voluminous literature on how to solve this very real problem.

Mr. MITCHELL: Mr. Chairman, I just wanted to comment on that. Could this question not be more appropriately put to someone from WHO, who will be a witness at this committee at a later date?

The CHAIRMAN: Yes, I suppose so. However, on page 18 there was some discussion about the WHO technical report and I think that is what Mr. Fairweather was referring to. I think Mr. Blanc of the WHO could probably give us a complete report of the whole aspect of this.

Mr. NICHOLSON: Not only in the report but more particularly in Dr. Brien's covering letter attention is drawn to the importance of using university staff and medical research groups at the universities. Is it not possible, Dr. Sellers, if it is going to take five or ten years to recruit the necessary staff recommended in your report, that a lot of this work could be referred to the different medical schools in Canada we are now supporting with taxpayers' money? Could not practically all these universities take on part of this load which Dr. Morrell and his staff are carrying.

Dr. SELLERS: This is a very reasonable question, Mr. Chairman, on a subject that I have thought a great deal about. I think if some specific contractual arrangements could be made it would be a good idea; but, for the reasons that I have mentioned before, namely the space problem and the increasing number of students, with the result of an increased student staff ratio—more students with the same number of staff—the universities have very real problems of their own. Now, I know my own department better than any other and our real limiting factor now is space. To some extent we have less recruiting problems. I think that our recruiting problem is relatively favourable, but we have no space or the space is limited. The same sort of comment can be extended to the other departments of pharmacology in this country. It will be some years before this changes.

Mr. NICHOLSON: Is it not a fact that in the field of medical research—and this is only one branch—most universities which are engaged in research work are reaching out for work. They are looking for new products and looking for grants from the research council to do work of this kind. I know that is the case of our own university out in British Columbia. Is there nowhere the two can be linked together to our mutual advantage in solving this problem?

Dr. SELLERS: In my position as head of a department of pharmacology, a particular department of pharmacology, I certainly am very interested in the question of financing a university department and, in going along a certain way, I feel that I would be bringing other matters to the attention of the committee. Now, I am not against this, I am quite happy to talk about financing universities.

Mr. NICHOLSON: All I am asking is this: if it is not an utopian problem, we should be doing something about it, and if it is an utopian problem let us forget it. But, is it practicable?

Dr. SELLERS: As I said, in relation to specific aspects being covered by contractual arrangement, I think it is possible.

Mr. NICHOLSON: Could not a committee such as you suggest in your report with the food and drug directorate try and work out a program of that kind?

Dr. SELLERS: This is one of the duties that I think they should undertake soon.

Dr. BRIEN: In respect of that particular point, Mr. Nicholson, that is one of the objectives that we felt might very usefully be pursued by this committee, however it came about. Perhaps initially we should just explore all the facilities available for testing at any level you like, not just in respect of patients, but also in respect of the facilities available to us in Canada, and the extent to which individuals presently operating them would be willing or interested in collaborating. I think until you get that sort of information you cannot come to any sort of sound conclusion, and we feel very strongly about that. There certainly is a need to make such an assessment.

Mr. VALADE: I should like to pursue this discussion a little further, Dr. Brien. I wonder whether it is possible to have a joint program in respect of the two sides of research or control? I have in mind the possibility of having universities take care of what they call *in vitro* experimentation, with the hospital research centres carrying on the *in vivo* experimentation. I realize that many hospitals have some type of research centre which would make such a plan possible.

Dr. DUFRESNE: What we are looking for now as far as hospitals are concerned is good clinical investigating units. If these do not exist we should like to see a group of men with proper facilities and clinical materials established to do the proper work. While I think it is only sound and safe to say that this does not exist in all hospitals, it does exist mainly in the teaching hospitals, so as a matter of fact this problem returns to the universities.

Mr. VALADE: Dr. Dufresne, perhaps you have not understood me. Is it possible that such a system could be established in respect of the hospitals and universities involved? I am sure that Dr. Sellers brought up the question of finance in good faith, and he said he would be very happy to discuss this question, but I am sure that most hospitals would be in a position to enter into this field. I realize, as Dr. Sellers has already stated, in order to get the right type of men this would involve a long range scheme over a period of perhaps five or ten years.

Dr. DUFRESNE: One must also find the men in the hospitals to do this type of work and they do not exist there today.

Dr. SELLERS: Mr. Chairman, normally a pharmaceutical manufacturer would deal with the clinical investigation in the hospitals and would be using the facilities of the hospitals. As far as using the facilities of universities for laboratory studies is concerned, the reason I said this was likely only in respect of very specific fields is that, in maintaining laboratories in the food

and drugs directorate, in the first place, it is only possible to check statements made in respect of new drug submissions, if it seems desirable to carry out research in appropriate fields, by using the talents of individuals who have become expert in these particular fields in order to review the new drug submissions or review the contentious questions in the drug field. If you farm all this work out to universities you would be detracting from a very important function of the central authority. Therefore, I do not think it would be desirable to farm too much of this work out. This is a central function that should be retained in the directorate.

The CHAIRMAN: Are there any other questions in regard to this specific point, gentlemen?

We will now move to the next section, that recommendation with respect to the expansion of the food and drug directorate. I think Mr. Mitchell indicated that he had some questions in this regard.

Mr. MITCHELL: Yes, Mr. Chairman, and I think perhaps the other two items I mentioned can be included in any comments that I wish to make or inquiries I put to Dr. Brien.

Dr. Brien, in your report you have stated that the expansion of the food and drug directorate is required, and you also take into consideration the suggestion of a division of the food and drug directorate. Do you feel that expansion is necessary and, secondly, that the directorate could be split into two sections perhaps because—and I think you would agree with me—an inspector of food would not need the qualifications that an inspector of drugs or new drug submissions would require?

Dr. BRIEN: To deal firstly with the need for expansion, I have not the slightest hesitation in stating categorically that I think it needs expansion in the worst way. They just do not have the man power to do that job which you and I expect them to do.

In respect of your second question regarding a division, you will notice that the committee did not make any very strong statement about that except to say that if it were contemplated it should be done only after a very careful look at all the factors involved.

If you read the appendices you will see that multiple recommendations have been made. One of those recommendations comes from an association of which I think you likely are a member, and is to the effect that the organization should be divided into food and drug directorates. We recognize the fact that there are half a dozen different submissions, or roughly that, which include such a suggestion. We did not sit down and devote any very prolonged or serious thought to the matter because in the first place we thought it was a bit beyond the terms of reference that were given to us, or at least we felt the main intent of the terms of reference did not include such a suggestion.

Secondly, we do not have the information which is relevant here, and certainly I think it would be fair to say that we would be very much opposed to any duplication in this field. I do realize that there are certain areas, particularly in respect of toxicology, for example, where one laboratory might be completely satisfactory having either two divisions or just one organization, as does exist today.

The feeling of the F.D.A. was that at the present time they would be against it. However, when you go to visit the F.D.A. you find that it is a giant compared to our own organization. If I remember rightly, it has 3,040 odd people, and these individuals are in various parts of the city—I am talking about their Washington arrangements—and they are certainly geographically divided right now. We just did not think this out to its logical conclusion, but I know that multiple bodies have suggested this.

Mr. MITCHELL: Dr. Brien, may I ask another question? Do you have definitely on record in the report to this committee that a separation of the directorate is necessary? Before you answer that, I would like to deal with an extract of the speech that Dr. Morrell has made. On page 7 he said "drugs are not dealt with entirely in the same way as foods". Now, to me, that indicates that there should be a definite division in this directorate. I realize the situation in which the director finds himself. I think that probably the budget has a great deal to do with it. At the same time I would like a recommendation that this at least be looked into if not implemented at some time because I have had a great deal to do with resolutions to the food and drug directorate, not recently but for some years now as an officer of the Canadian pharmaceutical association, and I think that they are sympathetic. However, your hands are tied as far as implementation of it is concerned. What I am driving at is that we could get some sort of definite recommendation which may strengthen your hand.

Dr. BRIEN: Where would you put the following situation. Take, for instance, a case where food has some residue in it that theoretically is a drug. Who would deal with that in divided set-up?

Mr. MITCHELL: If you are speaking of veterinary additives, I could tell you who could deal with that.

Dr. BRIEN: If you treat an animal with drugs and then there is some harmful effect, who would deal with it? I am thinking of dairy products here or indeed of the flesh of fowl or animal that has been treated with some kind of medicine. Where do you put that?

Mr. MITCHELL: I do not imagine these sections would be mad at each other. Could they not convene?

Dr. BRIEN: They are already amalgamated. For instance, I had a patient with chronic poisoning from apples that she ate which had been sprayed. She was a stout girl who was determined to become thin so she ate a great many apples and ate them all, including the core. I am sure she ate enough apples to get a pool of lead arsenic, or whatever the spray was. Ordinarily most of us would not have eaten enough to get the poison inside of us or else we would have thrown away the core and missed a good bit of it. Here again is an example. I am just producing some off-the-cuff arguments to show that it is not completely simple to separate food and drugs. I have no very strong feelings personally about the matter because I have not studied it that far.

Mr. MITCHELL: So that you would not want to say yes or no?

Dr. BRIEN: No, I would not.

Mr. MITCHELL: That is all I was asking.

Dr. BRIEN: I was trying to produce some arguments that show that it is not just a simple matter to split them from the standpoint of the work they do and also from the standpoint of economy. I sit on the fence and I admit it.

Mr. MITCHELL: I am only going by your recommendation here.

Dr. BRIEN: We went so far as to say that because multiple people brought it up the matter should be studied further.

Mr. MITCHELL: I would like to ask the same question of other witnesses and I presume that the committee would like to get the consensus. We have your answer now as being non-committal. That does not stop me from asking someone else.

Mr. FAIRWEATHER: He does tell us not to eat apple cores, which is a very great blow to me, I must say.

Mr. HARLEY: I was wondering about the words which appear on page 31 under No. 6. The third paragraph reads:

The committee agrees that it is necessary to have the animal pharmacology and toxicology reviewed by specialists who are working actively in laboratories, and who should not devote more than one-third of their time to reviewing new drug submissions or in other advisory or administrative work.

Could you elaborate on that I was a little confused by it, I might say.

Dr. BRIEN: I think there are two points here in particular. I am sorry Dr. Sellers had to leave, but I think I can tell you what our feeling on that was. I am sure that the department does not now, nor probably will it ever, repeat a great majority of the study. It was our feeling that at times they might wish to repeat some of it right here, and in fact I think they do on occasion.

A point about the one-third-two-thirds business is very simply this, that from our point of view it is highly desirable to have people who are working actively in the field, in this instance of pharmacology, who are on the review board which passes whatever is up for study. The point is that if you do not keep those people working on it actively, I think they very quickly stagnate. This is a means for getting accurate and up to date work all the time.

Mr. HARLEY: You are implying here that the actual review by specialists or actively working laboratories would not be done by the food and drug directorate but by specialists outside of the directorate?

Dr. BRIEN: No, no, by some of the pharmacologists who are already there, and the additional ones that we hope in due course to get. They would advise Dr. Morrell of what they feel is the status of this product or that. But for them to give him the best possible advice, we think they should be working actively in the laboratories for the better part of the time, rather, so that they are progressing as scientists themselves rather than sitting behind a desk and looking at books.

Mr. HARLEY: Is there enough laboratory work to keep these people busy for the remaining two-thirds of their time?

Dr. MORRELL: There is no doubt about that at all; and in connection with this advice, it is these same people who we call pharmacologists that you are now thinking of as working entirely on drugs, yet they have a great deal to do with the toxicity of foods, and they will be working in areas which are overlapping and which are extremely important, because if later on the committee is going to talk about pesticides and residues, it will be the same group which will be testing the food; and moreover, where are you going to put vitamins? They occur naturally in food; but now they are prepared as pharmaceuticals as well. You have vitamins in food as well as in pharmaceuticals. This at present can be done by one division of the food and drug laboratories, but if you divide it, you will have one on this side, and another on that side who are doing the same thing.

The CHAIRMAN: If it were divided it really would not serve the purpose, and would only add to the expense. Is that correct?

Dr. MORRELL: I think you would have about twice the cost for, perhaps, not as good results.

Mr. HARLEY: I have one more question on this section. What do they mean by the expression "Pharmacologists—five man years equal 15 persons"?

Dr. MORRELL: If you have 15 men working in a food and drug laboratory and one-third of their time is spent on revision, you have the equivalent of five

men; but there will be 15 men, and dividing their time by one-third each, you have what I call five man years.

Dr. BRIEN: A lot of people had difficulty with that, and so did we.

Mr. VALADE: As director of the department of medicine of the university of Montreal, Dr. Dufresne, have you received many complaints as to the drugs which were used not meeting with the requirements of the food and drug directorate?

Dr. DUFRESNE: You mean from doctors?

Mr. VALADE: Yes.

Dr. DUFRESNE: Not in that capacity, no.

Mr. VALADE: Were there any instances when you felt that the college of physicians or yourself, as head of the medical department, should bring some of those discrepancies to the attention of the food and drug directorate?

Dr. DUFRESNE: I suppose this whole problem is one of communication, and we are talking about the same thing, as far as I am concerned. We have a working committee on drugs which meets every month. No new drug is allowed in the hospital without this committee seeing and approving it and doing any medical research that must be done on it. All this information goes back to the committee who transfer it to the manufacturer. So far no information of that kind has been sent to the doctors or to the food and drug directorate. It has all been sent to the manufacturer. They have been the ones responsible for bringing the food and drug directorate up to date.

Mr. VALADE: You mean that your committee on drugs has done the same inquiry or the same investigation through the facilities of the hospital itself to make sure of a certain degree of safety, or to check on the safety of a drug?

Dr. DUFRESNE: That is right.

Mr. VALADE: On page 36, section 5, there is an item which talks about the responsibility of the manufacturer. Later on it says that the manufacturer recognizes his responsibility. I have a hard time to reconcile that with the responsibility that the food and drug directorate should take, if there is a responsibility. In what way is it a responsibility? Is it in research, or in testing, or a legal responsibility for putting the new drug on the market? In the opinion of the committee where does that responsibility lie?

Dr. DUFRESNE: I think that in the opinion of the committee the first responsibility about a new drug—that is as to its safety, or its introduction—is in the hands of the manufacturer. Then the food and drug directorate, at the time of the submission of the new drug, has to look at the records, such as in clinical testing of the drug, and then deliver a note to the practice that the drug can go into the field at that time. I think that after a drug has been issued to the profession, the doctors themselves have responsibility, no less than we have, to notice all reactions, either good or bad, and of course report them. This has not been done officially yet.

Mr. VALADE: When you have doubt about a certain drug, about the safety of a new drug in your hospital, what do you do with that drug? Do you send it back to the manufacturer, or do you make a report?

Dr. DUFRESNE: So far I must admit that no report has been sent to the government. The manufacturer himself has always been advised first, and sometimes he is the only one advised.

Mr. HADASZ: On page 42, we read that "It has become abundantly clear to the members of this Committee as they have proceeded with this investigation that: (1): There is need for a careful and painstaking review of all drugs, not merely new drugs." Does that mean that there are some drugs on the market now which should be re-tested or reviewed?

Dr. BRIEN: The thing we are thinking about there above all else is in the main a review relative to dosage in children; a consideration in view of the development of cancer in some people where it has been wondered whether drugs played a role or not; the field of congenital malformation where the multiple effects of drugs would appear to be just one factor; and whether this was a very good time, first and foremost, to settle the problem with respect to drug dosage in children; secondly, to look at the drug over the whole spectrum, particularly paying attention to the ones which have been suspected by groups which have been suspicious, particularly from the standpoint of the relationship to cancer and malformation, and perhaps also to disturbances of the blood forming organs and so on. That is what we had in mind.

Mr. HAIDASZ: Did you run across any complaints about the side effects of penicillin lozenges? Has that ever been brought to your attention? In my practice I have seen reaction to them and I have read and heard that they actually do more harm than good, yet they have been allowed to remain on the market.

The CHAIRMAN: When you found side effects, was there any machinery under which the general directorate could govern the manufacture or quality, especially with respect to side effects? Was this done specifically in your case?

Mr. HAIDASZ: This matter was also brought to the attention of the annual convention of the Canadian medical association, and they have made statements about penicillin lozenges, yet the food and drug directorate apparently have allowed them to remain on the market.

Dr. BRIEN: Penicillin mouth was the name given to what we are talking about. In 1943, I made some home-made lozenges by taking agar and cutting it up and putting penicillin in it. It looked like fudge, and I gave it to the soldiers who had had acute streptococcal and other bacterial infections in their mouths during the war, and it proved to be remarkably beneficial and effective in a fair proportion of cases. It did not taste very appetizing I am sure, but it produced results. Occasionally we began to get some of the persisting effects that you are talking about. So this has been known, but interest in it has waxed and waned.

The last time I really took up the cudgels over this was with the minister of health of this province, not of this country. At that time I did not get very far. My main objection to it was not the side reactions you are talking about. The side effects came along, it is true; but it sensitized people so that when they had something that really mattered and you wanted to give them penicillin, it was not an impossibility but it increased the hazards of penicillin therapy a great deal. At one time I tried to get some local legislation passed, but did not get very far I am afraid.

Mr. HAIDASZ: Apparently penicillin lozenges now can be sold over the counter without a doctor's prescription.

Dr. BRIEN: Up to 3,000 units.

Mr. HARLEY: This is the worst kind.

Mr. VALADE: I am told that in the United States they are not allowed to sell over the counter ointments or lozenges that contain 1,000 units. Is that right?

Dr. BRIEN: I do not know. If you had 10 it would be just as bad.

Mr. VALADE: Perhaps Dr. Morrell would know.

Dr. MORRELL: They have on the market in the United States—because I bought them—some antibiotic lozenges. I do not know about penicillin lozenges, if you are speaking specifically of penicillin. I am not aware whether or not they have a prohibition against the sale of penicillin lozenges.

Mr. VALADE: The purpose of my question was to find out their standards in respect of ours and whether they have limited it to 1,000 units.

Dr. MORRELL: You say they do allow anything under 1,000 units?

Mr. VALADE: I think so.

Dr. BRIEN: From the standpoint of getting into trouble with reactions, I do not think it makes any difference whether a person takes one lozenge with 3,000 units or three lozenges with 1,000. There should not be any at all.

Mr. VALADE: My question was an attempt to find out on what basis we work in respect of putting a drug on prescription and on what basis they are required to put a drug on prescription in the United States. Do we have the same standards or are we more or less lenient?

Dr. MORRELL: The legislation in respect of prescriptions is not in step all the way along between the United States and Canada. There are differences on both sides. Sometimes we seem to be more strict and sometimes they do. The question of penicillin lozenges containing 3,000 units or less per lozenge was discussed ten or more years ago with what was the equivalent committee of the drug advisory committee. At that time I think it was the committee on pharmaceutical standards. The matter was brought to the attention of the committee and a study was made of the reports by members of the committee. There was literature and so on in respect of the sensitivity reactions which might have been produced by these lozenges; and when the data was submitted to the committee the matter just dropped. It was not thought that there was sufficient evidence to require the elimination of that from the prescription sale. It has never been brought before the committee since. I do not know whether it was ten or 12 years ago, but it was a long time ago anyway.

Mr. HARLEY: I think from what Dr. Brien has said various medical bodies at varying times have agreed that penicillin lozenges in this strength should be off the market. What representations could they make, or to what body would they make them, to have this considered by the food and drug directorate?

Dr. MORRELL: The drug advisory committee meeting today has two members from the Canadian medical association. One of the members is Dr. McNeil from the committee of pharmacology in the Canadian medical association.

I am sure the directorate would consider any recommendation from the Canadian medical association to this effect.

Mr. MITCHELL: I think the pharmaceutical manufacturers have corrected that situation themselves. Speaking from a retail point of view I cannot remember when we have sold a penicillin throat lozenge for well over a year, but there are plenty of other antibiotic throat lozenges which have taken their place completely.

Dr. BRIEN: Yes. I think the tendency is to use agents that are used topically or locally, not necessarily all the time, but most of the time, and not ones that are very apt to be injected. The serious reactions to penicillin, the ones that are fatal or nearly so, not invariably but nearly always, follow the injection of a particular form of it. You can find a few fatal cases from penicillin taken by mouth, but they are pretty few and far between. The thing which triggers off the possibility is either the deliberate or inadvertent usage of penicillin at some prior time.

Mr. MITCHELL: In other words, you mean it tends to make them penicillin fast.

Dr. BRIEN: No. Here instead of making the germ penicillin fast it induces a state of hypersensitivity into that individual so that the next time they need it,

particularly in the injected form—procaine penicillin—the danger of a severe or even lethal reaction is tolerably high.

Mr. MITCHELL: You mean subcutaneously and not intravenously.

Dr. BRIEN: I just gave a patient 100 million units intravenously a day for the last week, but it is an unusual case. Usually it is subcutaneously or intramuscularly.

Dr. DUFRESNE: One more difficulty came from the fact that when taking those lozenges people very often did not know they were taking penicillin at all. If they did, then before injection when you asked them if they ever took it and had any reaction they would be able to tell you.

Mr. MITCHELL: If they did not know, then they did not read the label.

Dr. DUFRESNE: Why should they read it?

The CHAIRMAN: Gentlemen, I would like to have some advice about adjournment time. It look like we have a lot more to cover. Dr. Harley and some other members I believe have other questions. What are your views?

Mr. HARLEY: Personally I would be content to sit until six o'clock and see what we can accomplish.

Mr. MITCHELL: Mr. Chairman, I would prefer to sit until six o'clock in the hope that we would be able to finish.

The CHAIRMAN: Is that agreeable to the committee?

Mr. MITCHELL: I am afraid that there may not be many who would wish to be in attendance this evening.

The CHAIRMAN: Yes. If we sit until six o'clock I would hope that we could finish with these gentlemen because they have other commitments tomorrow.

Mr. HARLEY: We could go on until six o'clock and then reconsider the matter at that time when we know how much is left.

The CHAIRMAN: The only point I want to make is that there will be a vote at 8.15 p.m. and we will all want to be in the house at eight o'clock. Everyone has to eat. I do not want to crowd this all in by 6 o'clock and then have these gentlemen come back at 6.30 or any such thing as that, because I do want to get this cleaned up in so far as these two gentlemen today are concerned, if I can.

Mr. VALADE: In connection with this question of adjournment, Mr. Chairman, I wonder whether the committee members could point out what their main point of interest is, and then we could decide which one is more important. If we keep asking questions in the way we are we may not even end up at six o'clock with the completion of this report. It may be that some of the members would like to ask certain specific questions.

Mr. MITCHELL: I have only one question but it is not on the agenda, so I can wait until the agenda is cleared up.

Mr. HARLEY: I think we should go on to the recommendations, Mr. Chairman.

The CHAIRMAN: I was going to say the summary of recommendations commences at page 45 and I think it would be a good idea if we could bring this into focus.

Mr. HARLEY: Starting on page 47—I have no questions to ask in regard to the recommendation with respect to expansion of the food and drug directorate—

The CHAIRMAN: If I might interrupt, let us go through these recommendations starting at page 45.

The first recommendation is with respect to the expansion of the food and drug directorate. I think we have covered that very thoroughly with Dr. Sellers today.

The next recommendation is with respect to changes in the regulations at the present time. Do we have any questions on this recommendation?

Mr. HARLEY: Yes, I have.

Down the page, under (1), it says:

Therefore, the committee recommends to the minister that after a notice of compliance has been issued, greater controls than at present be exercised with respect to the drug.

And you list them later. I notice there is some question about the time in here; you say: "such time as deemed necessary".

Dr. DUFRESNE: Yes.

Mr. HARLEY: What sort of timing do you anticipate?

Dr. BRIEN: This was something we discussed at great length with our friends in Washington and one of their recommendations was to the effect that when a drug was released it should be subject to review at three month intervals for a minimum of one year and thereafter at such intervals and for such time as the commissioner felt was necessary. And they made the point in this instance that there was no finite time at which it would necessarily cease with respect to any drug. It would be determined in the light of experience, and that was the reason it was written in the very indefinite way that it is. I do not think you can define it with precision ahead of time.

Mr. HARLEY: What do you think would be the average then, approximately a year?

Dr. BRIEN: Yes. They have spelled out that it be reviewed at three month intervals for one year and then at subsequent intervals as determined by their experience up until that time.

Dr. MORRELL: This is a minimum of a year rather than a maximum.

Mr. HARLEY: Further down I notice that one of the controls is "dispensing by prescription only". This would mean that every new drug would be on a prescription only basis.

Dr. DUFRESNE: Yes, for one year.

Mr. HARLEY: Yes, but it would mean that every new drug, regardless of what it was to be used for, would be on a prescription basis for one year.

Dr. DUFRESNE: Well, that would be a reasonable period.

Mr. MITCHELL: Do you mean any drug?

Dr. BRIEN: Yes, anything that comes into the category of a new drug.

Dr. DUFRESNE: Of course, we would have to define what a new drug is.

Mr. MITCHELL: If you are speaking in connection with the tranquilizer field or the hypnotic field I would agree with you; however, there are many others classed as new drugs which, in my opinion, would not need a prescription.

Dr. DUFRESNE: How could you tell?

Dr. BRIEN: If you are thinking of marketing aspirin, which is a six and three-quarter grain tablet, it would be ridiculous to think of it in this way.

Dr. DUFRESNE: It says:

Unless, in the opinion of the minister, such controls are unnecessary.

You can understand now why this paragraph was added. It is added to cover a situation where controls would not really be needed.

Mr. HARLEY: In connection with (2)(b), it says:

—indications that the drug is newly introduced, or a new formulation, on labels and promotional material—

Would you visualize a standard label on every new drug saying that if you have reverse reactions, notify your physician?

Dr. DUFRESNE: Yes.

Mr. HARLEY: This would be standard for any new drug?

Dr. BRIEN: Yes.

The CHAIRMAN: Is there some way a general practitioner could know what side effects there were without one of his patients saying he had an adverse effect because he used a new drug? Is there some machinery in control of this whereby he could inform the food and drug directorate of this side effect?

Dr. DUFRESNE: Yes.

The CHAIRMAN: Something could be worked out?

Dr. DUFRESNE: Yes, by local organizations and referrals.

Mr. VALADE: In the practice of a pharmacist there is always a difficulty. Of course, the prescription always binds the pharmacist himself. As you know, not long ago a doctor used a drug which was called liefcort which caused an awful lot of uproar and there was no way for an organization to control its usage by the doctors who used this product. Now this, of course, is a recurrence that could be expected and it does not seem to be covered by the present recommendations.

Dr. DUFRESNE: I think you know what happened to liefcort now.

Mr. VALADE: Yes. But, is there any provision for this kind of control. As you know, we are seeking safety and in this recommendation we do not seem to have it. I want to be quite fair to you; I am not casting any doubts on professional doctors. I am trying to find out if there is a provision or recommendation made to avoid this.

Dr. DUFRESNE: I am afraid there is nothing in this report.

The CHAIRMAN: There is nothing in this report to have the food and drug directorate control the practice of medicine in the province.

Dr. DUFRESNE: No.

Mr. VALADE: I am talking about the usage of a drug by a doctor.

Dr. DUFRESNE: You might talk about the manufacturing or the usage of it.

Mr. VALADE: I am saying the control on the pharmacists will be imposed by the recommendations through prescription. You control this drug in so far as the pharmacist is concerned but you do not control it in the doctor's office. The doctor is free to use this drug without any control whatsoever from the drug directorate or anywhere else.

Dr. DUFRESNE: You must differentiate between the fact that he is manufacturing the drug or getting the ingredients for its preparation ready and the fact he is using it or selling it.

Mr. VALADE: I am concerned with the fact he is using it and there is no control in that connection.

Dr. DUFRESNE: That is out of our terms of reference, I believe. This is the practice of medicine, not the manufacturing of new drugs.

Mr. VALADE: I am not clear in this regard. Perhaps I am just being stubborn.

The CHAIRMAN: I think Dr. Cameron and Mr. Curran covered this subject at the last meeting when it was suggested that it was not the responsibility of

the food and drug directorate to control the practising physician within the provinces, and that the terms of reference of this committee excluded that specific problem.

Dr. CAMERON: Mr. Chairman, there are two points involved in this regard. If a physician or anyone else manufactures a drug for sale he comes squarely within the new drug provisions of the Food and Drug Act. If an individual compounds a drug in his own office to give to his own patient we would regard that as part of the practice of medicine, something over which we had no control at all.

The CHAIRMAN: The next recommendation is in respect of the establishment of a standing drug committee. I feel we have discussed this subject very thoroughly at the opening of Dr. Brien's remarks. Is there any additional question anyone has to ask in that regard?

Mr. MITCHELL, would you just wait for one moment so that we have a quorum?

Mr. MITCHELL: I have part of the drug advisory committee waiting for me.

The CHAIRMAN: Perhaps before we conclude our discussions it would be appropriate for me to convey our thanks to the three gentlemen who have appeared before this committee today, and for the information that they have given to this committee. I am sorry if we have appeared to rush you gentlemen, and I assure you that it certainly was not the intention of the chairman to do so, but circumstances beyond our control required us to start a little later.

Mr. BALDWIN: Mr. Chairman, unusual diseases require difficult remedies.

The CHAIRMAN: I would like to thank Dr. Brien, Dr. Dufresne and Dr. Sellers for appearing before this committee. I am sure we will be able to digest their recommendations and incorporate them into our report when and if we make a report to parliament.

Dr. BRIEN: Mr. Chairman, I should like to suggest that when you gentlemen are looking at the list of appendices, the place where the meat lies is in item 48. The other items are very interesting but number 48, the very last one, contains a digest of the important material right across the board. There are 20 odd pages of the report under general headings but the main information is contained in the item I have indicated.

The CHAIRMAN: The appendices have been sent to all members by the Minister of National Health and Welfare in documented form for informational purposes.

Mr. MITCHELL: I thought it was a trucking company that was delivering that material.

The CHAIRMAN: Before we conclude our meeting may I have your wishes in regard to incorporating the report as part of this committee's hearings?

Mr. ENNS: Inasmuch as this material was sent out to the members of this committee in a separate form I think it would be very useful to have this report included.

Mr. MITCHELL: I would so move, Mr. Chairman.

Mr. HARLEY: I second that motion, Mr. Chairman.

Some Hon. MEMBERS: Agreed.

The CHAIRMAN: Do I need a motion to adjourn?

In order to make it quite clear I should state that we will meet at 9.30 in this room on Thursday morning of this week to further discuss the food and drug directorate unless I send notice to you regarding a change resulting from difficulties beyond the control of the chairman.

APPENDIX "A"

REPORT OF THE SPECIAL COMMITTEE
ON NEW DRUGS

APPOINTED BY

THE ROYAL COLLEGE OF PHYSICIANS AND
SURGEONS OF CANADA

AT THE REQUEST OF

THE MINISTER OF NATIONAL HEALTH
AND WELFARE

DECEMBER, 1962.

*The Royal College of Physicians and Surgeons of Canada*144 Iroquois Avenue
London, Ontario

January 18, 1963

The Hon. J. Waldo Monteith,
Minister of National Health and Welfare,
Parliament Buildings,
Ottawa, Canada.

Dear Mr. Minister:

It is with pleasure that I herewith enclose the report of the Special Committee on New Drugs, appointed by the Royal College of Physicians and Surgeons of Canada, at your request, last May.

This document and its appendices contain data and recommendations which are the result of many hours of work on the part of numerous bodies and individuals, whose cooperation was remarkable, and without which the work of the Committee would have been most difficult. In addition, all three members of the Committee were present on every occasion that it met. This report, therefore, represents a "team" effort, and the matter contained therein has been discussed, and revised, repeatedly, until now it has reached its final form after the most careful consideration.

The Committee has preferred to leave investigation and exploration of many important subjects to the recommended Standing Drug Committee and to the Food and Drug Directorate. These subjects include the exploration of means of encouraging and financing more clinical trials in Canada; the mechanism by which continued drug surveillance may best be carried out effectively; means of expediting the exchange of information on drug toxicity among countries; means of minimizing confusion in the nomenclature of drugs. All these matters are important but hinge on the most pressing problem—availability of qualified personnel to enforce recommended procedures and implement present recommendations. Obtaining suitable personnel will prove to be a major problem. Conceivably, some of these matters might be handled by contractual arrangement with educational, professional or research organizations.

The collaboration of the Medical, Dental and Veterinary practitioners must be sought in respect to reporting of toxic reactions associated with the use of drugs and potentially toxic materials, be they old or new. This is an ever present, continuing need. The solution is not legislative only, but is one of continuous education and continuous collaboration.

Our opinions have been based on the assumption that many of the basic decisions to do with control of new drugs are, in the final analysis, matters of judgment, not of definition.

We have attempted to limit as little as possible the legitimate distribution of a drug for testing purposes, but to make stringent limitations legally possible when this is necessary.

Our recommendations have been made after considering the number of investigators and institutions which might be considered "qualified" to conduct investigations in a country the size of Canada.

A safe, workable plan in this country might prove inadequate in a country many times larger. Attempting to legislate or regulate "in theory" regardless of practical considerations, makes administrative and practical difficulties accrue which are at odds with basic purposes. We believe that the introduction of new drugs in a proper way is in the public interest, and have based our considerations on this premise.

One might assume that in some cases the producer of a new drug might not agree with the decision of the Food and Drug Directorate. The Royal College Committee considers that a decision of the Directorate should be open to review by the Standing Drug Committee (if formed) and in the event of disagreement final decision should be with the Minister.

Yours sincerely,

(signed) F. S. Brien,

F. S. Brien, M.B., F.R.C.P. (C)

Chairman, Special Committee on New Drugs.

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Report of the Special Committee Appointed by the Royal College of Physicians and Surgeons of Canada at the Request of the Honourable J. Waldo Monteith, Minister of National Health and Welfare.

1. *Terms of Reference*

"To examine critically and objectively our present procedures for dealing with new drugs, the requirements of the Regulations, and any other matters that, in the opinion of the Committee, are relative to the issue. I should point out that the purpose of the new drug regulations is to ensure safety".

2. *Members of the Special Committee*

1. Dr. E. A. Sellers,
Professor of Pharmacology,
Head of the Department,
University of Toronto.
2. Dr. Roger Dufresne,
Director,
Department of Medicine,
University of Montreal.
3. Dr. F. S. Brien,
Professor of Medicine, and
Head of the Department,
University of Western Ontario, and
Chairman of the Special Committee.

3. *Procedure*

Initially, the Committee met with the Director and chief officials of the Food and Drug Directorate, to discuss in the proposed terms, the problems associated with the administration of the Food and Drugs Act, and the Regulations thereunder, particularly as they related to the problems of "New Drugs". The Committee then undertook to enter into correspondence with such bodies (at the national level, whenever possible), and individuals, as in its wisdom it felt could offer advice with respect to the problems contained within the above terms of reference.

These included:

1. The Canadian Pharmaceutical Manufacturers Association.
2. The medical Section of the Canadian Pharmaceutical Manufacturers Association.
3. L'Association des Fabricants du Québec de Produits Pharmaceutiques.
4. As many of the independent smaller firms as the Committee could locate.
5. The Canadian Pharmaceutical Association.
6. The Canadian Society of Hospital Pharmacists.
7. The College of Pharmacists of the Province of Quebec.
8. The Canadian Dental Association.
9. The Canadian Veterinary Medicine Association.
10. Connaught Medical Research Laboratories—University of Toronto.
11. L'Institut de Microbiologie et D'Hygiène de L'Université de Montréal.
12. The Canadian Medical Association.
13. The Canadian Society for Clinical Investigation.

14. The Medical Schools of Canada, through the Executive Secretary, Association of Canadian Medical Colleges.
15. The Deans of Pharmacy in all the Faculties of Pharmacy in Canada.
16. The Canadian Paediatric Society.
17. The Pharmacological Society of Canada.
18. The Canadian Medical Protective Association.
19. Mr. R. E. Curran, Q.C., Legal Adviser to the Department of National Health and Welfare.
20. The Food and Drug Administration of the Department of Health, Education and Welfare, Washington, D.C.

With the exception of the F.D.A. in Washington, these bodies, or persons, were invited to consider the problem presented to them, and to submit any comments that they wished to make, in writing.

In addition, several bodies, and individuals, having become aware of the existence of the Committee, and of its terms of reference, made voluntary, and unsolicited submissions to the Committee.

In most instances the bodies to which the Committee had written were asked to have several of their responsible officials, or representatives, meet with the members of the Committee to discuss the various aspects of the "New Drug Problem". Meetings were held, with all the Committee members present and the following bodies were interviewed:

1. The staff of the Food and Drug Directorate—on several occasions.
2. The Canadian Pharmaceutical Manufacturers Association, together with members from the Medical Section of this body.
3. The Canadian Pharmaceutical Association, which in part was represented by the President of the Canadian Society of Hospital Pharmacists.
4. The Canadian Society for Clinical Investigation.
5. The Canadian Medical Association.
6. The School of Hygiene, University of Toronto.
7. The Canadian Veterinary Medicine Association.
8. L'Institut de Microbiologie et D'Hygiène de L'Université de Montréal.
9. The Quebec Branch of the Canadian Society of Hospital Pharmacists.
10. The Canadian Paediatric Society.
Société Canadienne de Pédiatrie.
11. L'Association des Fabricants de Québec de Produits Pharmaceutiques.
12. The Food and Drug Administration, Washington, D.C.

In addition the Chairman of the Committee inspected several pharmaceutical manufacturing plants, particularly from the standpoint of research, methods of production, quality control, etc. He also met with various officials in these plants and discussed the problem of drug safety. Considerable correspondence, and further submissions were received by the Committee from the bodies interviewed, and other interested parties.

All three Committee members, separately spoke with various persons from whom useful data could be obtained. These included members of the Medical Research Councils (Canada and United Kingdom), Ministry of Health (United Kingdom), and a representative of the World Health Organization.

The Director of the Food and Drug Directorate, Dr. C. A. Morrell, made available to each of the members of the Committee, copies of the Food and Drugs Act and the Regulations of the Food and Drugs Act (amended to

February 1962), and detailed copies of the present procedures used in the Department re New Drug Submissions (see Appendix 1).

4. Concepts of New Drug Control

The last item in Appendix No. 1 is a copy of an address by Dr. C. A. Morrell, entitled "Protecting the Consumer in the Field of Food and Drugs", delivered to the Consumers' Association of Canada Conference, Queen's University, Kingston—June 21, 1962, in which the functions of the Food and Drug Directorate are outlined. The following excerpts are worthy of inclusion in this report:

"the Food and Drugs Act is a consumer's Act intended to protect the consumer from health hazards and fraud or deception in the consumption or purchase and the use of foods, drugs, cosmetics and medical devices. It is not and never was intended to assist the producer, manufacturer or retailer in preparing or marketing their products". (1—paragraph 2—page 1).

"The Food and Drugs Act virtually does not permit the department to put a government stamp of approval on any food, drug, cosmetic or device nor to approve of any labelling, packaging or advertising. This is one of the reasons it is unlike some other federal legislation concerning foods". (2.—paragraph 3—page 1).

"The method employed by the Act and carried out in the Regulations is to make it an offence to do, or not to do, specific things. Since the law makes the omission or commission of specified acts a crime, the Food and Drugs Act is considered a part of Criminal Law and as Criminal Law it is within the authority of the federal government". (3.—paragraph 4—page 1).

"What I am saying, and I want to be perfectly clear about it, is that persons preparing or selling foods, drugs, cosmetics or medical devices are responsible for their products and for ensuring that they meet the requirements of the Food and Drugs Act and they will get no official approval if they do". (4.—paragraph 1—page 2).

"Another aspect of the law and its administration needs to be made quite clear and to be emphasized, particularly at this time. Many people believe that because of the existence of the Food and Drugs Act and the Food and Drug Directorate that everything found on the market that is a food, drug, cosmetic or device has been approved and found to be quite satisfactory in every way. This is not correct. There is no guarantee in this field any more than there is a guarantee that no crime will be committed just because there is a Criminal Code". (5.—paragraph 3—page 2).

"Drugs are not dealt with entirely in the same way as foods. Indeed the section that deals with the safety of foods could not be applied to drugs. If it were forbidden to sell drugs having in or upon them any poisonous or harmful substances no active drugs could be sold. All drugs that have any effect at all are harmful to all people in excessive doses and they have the potential of being basically harmful to certain people in ordinary doses. Not only are there contraindications (conditions in which they should not be used) for most drugs but there are also dangers from known or unknown undesirable side effects. It is well for the laymen, which includes the vast majority of people, to remember the slogan—"If it is not food it is poison". *Don't take any drugs unless you have to*". (6.—paragraph 5—page 4.)

"Up to the present, at least, it has been considered that all necessary precautions have been taken for the safety of the public if an acceptable new drug submission has been made and the drug meets the standard, if properly labelled and packaged and is required to be sold on prescription only* (which

* if Scheduled.

means it can legally be sold to a patient only on a doctor's order) and if doctors are made aware of the dangers of the drug." (8.—paragraph 6—page 5).

"Among the more important sections of the regulations, especially during the last few years, are those related to requirements for introducing new drugs. In these regulations new drugs are defined and the manufacturer is required to submit in a form, manner and content satisfactory to the Minister, all the information available about the new drug, including reports of his tests to show the safety of the drug when it is used in the way and for the purposes he recommends. This is called a "new drug submission". During the last eleven years, 1,883 new drug submissions have been received. There have also been many hundreds of supplements to new drug submissions". (9.—paragraph 1—page 6).

"These submissions are reviewed by members of our staff. If a new drug submission is found to be satisfactory the manufacturer is notified that the new drug submission complies with the requirements of the law and that he may sell the drug if he fulfills all other requirements of the Act and Regulations. Once again must I emphasize that a manufacturer is not told that his drug is safe. Many years of wide usage may pass before all the possibilities of the drug for good or bad are known. As further experience with the drug is gained, dangers not previously revealed or suspected may be discovered. In such circumstances the Food and Drugs Act requires *the manufacturer* to issue the necessary warnings either to the public or to the doctor". (10.—paragraph 3—page 6).

"Once a new drug submission has been accepted as complying with the law and no change is made in the drug or the claims made for it, there is at present, no legal support for demanding the withdrawal of that drug unless it fails in some way to comply with other requirements of the Food and Drugs Act and Regulations. On two occasions in the last eleven years the manufacturers have been asked by the Food and Drug Directorate to withdraw a drug. In both cases they have done so. In all other cases when drugs have been recalled, the manufacturer has done so on his own initiative". (11.—paragraph 3—page 6).

"Advertising". "It prohibits the advertising of any food, drug, device and even cosmetic, as a treatment, preventative or cure of any of a list of serious diseases. It is wisely held that anyone suffering from such diseases should consult his doctor for a proper diagnosis and treatment and that persons with something to sell should not encourage the public to diagnose and treat themselves for these grave conditions. Furthermore, delays in going to a doctor may have serious or even fatal results. I believe this section in Canada's law is unique". (12.—paragraph 1—page 7).

"When one considers the amount of work and the complexities involved, the administration and enforcement of the Food and Drugs Act can be frightening to contemplate." (13.—paragraph 2—page 7).

"At this point may I say that keeping informed of the significant advances in the world literature (medical and scientific) that influence our work is a monumental (yes, a colossal) task. How we are going to keep up with it is a problem we are now studying. Some sort of literature review and information retrieval section seems to be necessary". (14.—paragraph 3—page 8).

"Food and Drug is not a benevolent, all powerful, all pervasive protector that acts as a personal, immediate guardian in respect to every mouthful of food and drink you take or every pill you swallow. It is a "police" organization set up to "police" a great number and variety of products and industries for the purpose of bringing about compliance with the terms of the Food and Drugs Act, the Proprietary or Patent Medicine Act and the Narcotic Control Act. The essential purpose of our policing is to make the manufacturers and

dealers live up to these laws. No more and no less. *The manufacturer must accept full responsibility for his products*". (15. Paragraph 4—page 9).

Before forming an opinion on the suitability of these concepts and the present procedures for dealing with new drugs, it is appropriate to consider the interests of the various parties concerned.

First and foremost is the interest of the public, perhaps represented best by the patient who receives a new drug with the expectation he may receive benefit from it. His concern (although perhaps not expressed) is with his safety and with the benefit he expects to receive.

It is pertinent that from the moment of conception to the moment of death every individual is exposed to risks, sometimes involving life, which he cannot escape. Such risks obviously include, but extend far beyond, his exposure to chemical substances, whether such exposure occurs by accident or in the case of drugs, by design. It is not possible to eliminate risks to health or life but it is possible, and is considered in the public interest, to minimize certain of these risks, by various means. Clearly, an underlying purpose of the Food and Drugs Act is to minimize certain risks associated with the use of foods, cosmetics, and drugs. The concept of minimizing rather than the impossible objective of eliminating risks, is fundamental in any legislation of this type.

New drugs are produced with the object of improving the diagnosis, prevention, or treatment of disease and this objective is one which we consider to be in the interest of the public at large and one which the Committee considers should be encouraged rather than restricted by legislative procedures. It is unnecessary to expand this argument for the benefits which have accrued to mankind through the introduction of new drugs are common knowledge. Insulin, sulphonamides, penicillin, vitamin B₁₂, poliomyelitis vaccine, are but a few in a long list of substances which, by altering the natural history of disease, have altered the life history of man.

Nevertheless, the story of past successes does not alter the basic principle, that the public has a prime interest in the safety of new drugs, in their effectiveness, and in the way in which they are introduced.

The second group whose interests are involved, is the producer or manufacturer of new drugs. At the present time most new drugs are produced by large pharmaceutical manufacturers which operate internationally. This state of affairs is likely to continue. The costs relative to research and testing of a new drug are very high and competition among pharmaceutical manufacturers is keen. It is difficult for a small company to compete.

In Canada, most of the large pharmaceutical manufacturers are controlled from outside the country but, of recent years, several have made determined efforts to increase pharmacological and toxicological research, and to increase clinical testing of new drugs in Canada prior to general marketing. Both of these trends should be encouraged, rather than restricted, but with due regard to the interest of the public at large.

The pharmaceutical manufacturers differ from other commercial enterprises in that their products are concerned with the health and welfare of the individual directly, often at a time the individual requires immediate help. There is no doubt in the minds of the Committee that ordinary commercial aims, and the objective of supplying the best medicine for a sick person, become confused and require an arbiter. The relationship of effectiveness for the intended use, and safety in the way proposed for use obviously must be considered in each instance. Acceptable risks for any drug cannot be defined, for instance acceptable toxicity in an effective anti-leukemic drug would be completely unacceptable in an hypnotic drug. Thus the relationship of effectiveness to toxicity is truly relative and the acceptability of a drug becomes a matter of judgment, not definition.

The third group concerned directly with new drugs comprises the practitioners. The interest of the practitioner lies between that of the patient and the manufacturer. He is interested in the continued well-being and the improvement of his patient. If existing treatment is unsatisfactory, he must and should be interested in the introduction of new and improved treatment, yet he must prove that the new innovation is, in fact, better than the old. The ability to interpret experimental data, to safeguard the patient and produce evidence of clinical effectiveness, requires training, sympathy, and acumen beyond the ordinary.

5. *Present procedures of the Department with respect to new drugs.*

The present procedures of the Food and Drug Directorate with respect to new drugs are aimed at ensuring that the provisions of the Act, and Regulations under the Act (C.01.301; 01.302; 01.303; 01.304; 01.305; 01.306; 01.307) are followed. The procedures are described in detail in Appendix I and have been referred to in a general way in the previous section (quotation from a presentation of the Director).

For those who are unfamiliar with the process of introducing a new drug to the market it may be helpful to present an outline.

From a pharmacological standpoint, a drug may be considered to be an agent which modifies an existing biochemical or physiological process in the body, or in a microbiological organism present in the body. Thus, research on the fundamental nature of biological processes may suggest appropriate chemical substances which accelerate or inhibit a particular process. If the biological process is related to a disease, altering it may be expected to affect the disease. Often scores, even hundreds, or thousands of chemical compounds may be tested pharmacologically *in vitro* or in animals before one is found which gives indication that it might prove effective clinically. If a substance is found, its general pharmacological activity and its toxicity will be studied intensively prior to clinical trial. When these investigations confirm that the drug is effective, and the side effects (effects not related to the primary action) and toxicity warrant it, steps will be taken to arrange clinical trials.

At this point the manufacturer (for it is almost always the manufacturer who brings a drug to this stage) is required to inform the Minister (Food and Drug Directorate) of his intention to arrange clinical investigation. An identifying name or mark must be supplied to the Minister. The manufacturer is required to distribute the drug to qualified investigators only, who have facilities suitable for the investigation in question. He must keep records of the distribution of the drug and of the results of the investigation(s), and make these records available for inspection, to the Food and Drug Director on request.

Approval of the Director is not required, nor is the manufacturer required to supply more information than stated above. In spite of there being no legal requirement, usually manufacturers have filed with the Director an "Investigational Use Circular" which contains reasonably complete data on the nature of the drug, its toxicity, etc.

When sufficient evidence has been acquired

1. to ensure safety
2. to establish the dose
3. to define effectiveness
4. to define side effects and contra indications
5. to clarify the effects of overdosage

this information is compiled as the clinical section of a New Drug Submission. Together with data acquired from the pre-clinical studies, information on components, composition, methods of processing and packaging, facilities for control

(raw materials to finished product), stability, proposed labelling, and samples of the finished product, it comprises a New Drug Submission, which is submitted to the Directorate. Within 90 days the Minister (F.D.D.) is required to notify the person filing the submission whether the data and information comply with the appropriate provisions of the Food and Drug Act. If a Notice of Compliance is given, the manufacturer may sell the product, subject to other provisions of the Food and Drugs Act. With some frequency the Directorate has required further data. In some cases when a definite indication has existed the product has been listed in the schedules of the Act, restricting its sale to the prescription of a practitioner. Until very recently there has been no provision to suspend or withdraw a Notice of Compliance.

The responsibility of the Food and Drug Directorate is to review the submission as a whole and particularly to ensure that evidence has been obtained "to establish the safety of the drug for the purpose and under the conditions of use recommended." The "purity and quality" of the product, and the capability of the manufacturer to maintain these properties, and the claims made for the product, are also the subject of scrutiny.

The Food and Drug Directorate fulfils its duties by

1. Generally reviewing the submission.
2. Assigning specific sections to members of its staff expert in the appropriate branch of science applicable to that section, i.e., the clinical trials are reviewed by a physician; the pharmacological and toxicological sections by a pharmacologist; the analytical sections by a chemist.
3. A general review of opinions on specific sections, and the submission as a whole, by the Director with the advice of appropriate members of the staff.

The usual procedure is to request the manufacturer to supply additional information if some part of the submission is questioned. It is not customary for the data on pharmacological action, toxicity, or quality to be subjected to experimental confirmation in the laboratories of the Directorate. Usually there is no direct communication between the Directorate and clinical investigators.

Most new drugs introduced to the Canadian market have been developed elsewhere. This fact affects the problems presented to the Food and Drug Directorate considerably. Most if not all of the pre-clinical studies have been carried out in the country of origin, and most of the clinical trials have been carried out in other countries. Very frequently the product is imported into Canada in bulk, after manufacture in a foreign country. After importation it may be processed additionally in various ways, and finally formulated for market. Quite often finished products are imported and packaged in Canada. The significance of these facts is that intimate knowledge of the stages of production, of the individuals conducting testing or clinical trials is variable. It may be negligible, fragmentary or it may be virtually complete.

The following paragraphs illustrate the extent of information on production and control of drugs in foreign countries easily available to the Directorate (and to this Committee).

Excerpted from World Health Organization Technical Report Series No. 138

1. Egypt—Analysis by Government, but mostly on drugs entering Egypt only.
2. France—Control by Government. Regular drug plant inspections.
3. India—Federal control over drugs entering India. State control over domestic manufacture.
4. Japan—Analysis by Government.

5. Sweden—New Drug requirements.
6. United States—Federal control. Drug plant inspection. (see below)
7. United Kingdom—Government and industry control. Drug plant inspections for biological products. Export licences; probably no control exercised over exports. (see below).
8. West Germany—Loose Government control. Only poliomyelitis vaccine is strictly controlled.
9. Denmark—Government control very similar to that existing in Canada.
10. Italy—Theoretical strict control—in practice very little enforcement.
11. Holland—Government the largest manufacturer and carries out testing; has different requirements for exports.
12. Austria—Government control on some items.

These excerpts serve to indicate the variable controls on production of drugs, and the paucity of information on conditions actually existing in various countries.

The United States, the United Kingdom, Switzerland, and to a lesser extent France, West Germany and Italy are the major exporters of drugs to Canada. In some of these countries the control would appear to be good but the Directorate has no assurance that it is applied to exports. In the majority of foreign countries controls and tests on drugs intended for export appear to be the responsibility of the individual manufacturer. The same situation obtains for drugs made in Canada but intended solely for export to other countries.

Section 30 of the Food and Drugs Act states that the Act does not apply to drugs not manufactured for consumption in Canada and not sold for consumption in Canada, if the package is marked 'Export' and a certificate has been issued to the effect that the package and its contents do not contravene the laws of the country to which it is consigned.

Considerably more information is available of the situation existing in the United States and the United Kingdom.

United States—New Regulations respecting new drugs are being formulated but had not reached their final form when the Committee visited the Food and Drug Administration on the 6th and 7th of December, 1962.

See Appendix 2—"The Impact of New Drug Regulations on Physicians", by George P. Larrick, Commissioner of Food and Drugs, U. S. Department of Health, Education and Welfare, and Appendix 3—"New Development in Drug Regulation", by Ralph G. Smith, M.D., Acting Director, Bureau of Medicine, U. S. Department of Health, Education and Welfare, and Appendix 4—"Report of the Visit of the Royal College Committee to the Food and Drug Administration in Washington".

United Kingdom—Informal discussions were held by a member of the Committee with representatives of the Minister of Health and the Medical Research Council in September 1962. From these, and from other sources it appears that the controls of biological products are virtually the same as those in Canada and the U.S.A.; testing of vaccines, sera, etc. is carried out by the Medical Research Council. With respect to the remainder of pharmaceutical products the control would appear to be vested in the industry itself. The ethical practices of the industry and the Common Law are the safeguards on which the public depends. There is a considerable body of opinion that these safeguards are insufficient. Advisory Committees to the Ministry of Health exert considerable influence by advising practitioners of the effectiveness and toxicity of drugs. The free forum of the correspondence columns

of the medical journals have proven a valuable source of information of the side effects and toxicity of drugs used in practice. This has been peculiarly useful in the U.K., as compared with North America.

The procedures followed by the Directorate respecting imported drugs are outlined below.

Drugs in Schedule "C" (Insulin, Liver extract injectible preparations, Anterior pituitary extracts, Radio-active isotopes) and in Schedule "D" (Vaccines, Sera, Antibiotics for parenteral use) may *not* be imported into Canada unless the manufacturer has been licensed. A condition of the licence is that the manufacturing plant must be inspected by an officer of the Department. At the present time 46 foreign firms hold such licences (30 in the United States and 16 in Europe and Asia).

All such products are on a release basis (that is, each lot must be tested by the Department and found satisfactory before distribution), until sufficient evidence has accumulated that the drug meets the standard. In addition, an annual survey is made of all such products imported into Canada, with tests being carried out on representative samples. Up to the present time all of these products have been found to be satisfactory.

Drug plants manufacturing sensitivity disks (for use in determining the sensitivity or resistance of germs to an antibiotic) must be inspected and all lots are on a release basis. In addition, all antibiotics requiring certification in the United States must be accompanied by a certificate issued by the United States Food and Drug Administration.

Imported drugs not on Schedules "C" or "D" are controlled by 'spot checking'. Periodically, imported raw materials and finished drug products are sampled at Customs, and analysed. About 10% of drug importations are thus analysed. During drug plant inspections the Food and Drug Directorate examines the protocols on imported raw materials.

Short of testing every shipment of drugs that enters Canada the only manner in which the Food and Drug Directorate can have reasonable assurance that imported drugs are of good quality is to inspect every foreign manufacturing plant in the same way that it inspects Canadian drug manufacturing plants.

At the present time both foreign and domestic manufacturers of drugs listed in Schedules "C" and "D" of the Act must submit to inspection of their premises used for the production of these products before a licence is granted. The inspection is repeated annually, or even more frequently in the case of domestic and U.S. plants; yearly, or at least every second year, in the case of European manufacturers.

At present the detailed requirements for establishing the toxicity of a drug in animals for inclusion in a new drug submission are not covered in the Regulations. This does not mean there are not stringent requirements. The regulations (C.01.302.d; C.01.304.b) require detailed information of the 'test' establishing safety for the purpose and under the conditions recommended. The nature of the tests considered necessary, depends on the drug and its intended use, and the procedure presently followed by the Directorate is minuted (Appendix No. 1., Pugsley, April 25th, 1962, attachment). The permutations of drug and intended use are limitless and in the opinion of the Committee make it inadvisable to alter the regulations by including specific standards of testing, or altering the actual procedures of the Directorate. The procedures of the Directorate will be altered from time to time with increasing knowledge of toxicological testing, by knowledge of the susceptibility of certain species of animals for certain types of testing, and by the development of tissue culture or other methods of testing toxicity. These procedures

or 'ground' rules of what is likely to be acceptable in specific situations should be available to manufacturers.

In order that knowledge of the validity of preclinical testing procedures may be increased, it is desirable that clinical toxicity should be correlated with the information obtained from using animals or from *in vitro* methods. This type of study is of obvious importance and should be encouraged within the Directorate. At present, because of an inadequate number of staff, the suggestion is impractical as a general procedure.

The procedures of the Directorate respecting new drugs are governed by the Food and Drugs Act, and Regulations, and in turn are influenced by the other responsibilities of the Directorate and the number and capability of the staff.

Mention has been made of features of the Act and Regulations which may warrant amendment or further study. Some recommendations appear later. In respect to other duties of members of the staff, the Food and Drugs Act is by no means limited to control of new drugs. The percentage of time and money spent on administration of the Act in respect to drugs, as opposed to foods, cosmetics and devices, is about 40% of the total. (See Section 6). The qualifications of the staff who review New Drug Submissions, are appended as Personnel Record Sheets (Appendix 43).

An additional duty, not previously mentioned, is the operation of a Poison Control Co-ordination Centre to co-ordinate information supplied to local Poison Control Centres in Hospitals across the country. The dissemination of information has been slow and this undoubtedly has affected the work of local centres adversely. The explanation lies in the discrepancy between responsibilities or potential responsibilities of the Directorate and the availability of qualified personnel to assume these responsibilities.

New Legislation or Proposed Modifications in Regulations in Relation to Procedures.

Recently an Act to amend the Food and Drugs Act (Bill C.3) has been introduced to the House. Its provisions make it possible to define the conditions under which samples of drugs may be supplied to physicians, dentists, veterinary surgeons or pharmacists. It is understood from the Director that these conditions will make it necessary for such persons to request a specific quantity of a specific drug. The Committee agrees with this legislation and the intent of the proposed regulation.

The Bill also adds a new Schedule ("H") of drugs proscribed for sale, and includes in the Schedule two drugs—Thalidomide and Lysergic Acid Diethylamide.

The Committee believes that the intent of this legislation is praiseworthy but could be achieved in other more appropriate ways. In its recommendations the same end, of limiting the use of a drug to certain qualified persons, is achieved without forbidding the sale of the drug absolutely. The Committee disagrees with absolute proscription of Lysergic Acid Diethylamide for investigational clinical use, and with the proscription of Lysergic Acid Diethylamide and Thalidomide for investigational use in animals.

The Committee has been informed that no other legislation or amendments to the Regulations with respect to new drugs is pending.

Proposed amendments to the Regulations regarding manufacturing Facilities and Controls have been circulated (Schedule 33) to manufacturers for comment. These amendments (C.01.051-.055) require that all drugs sold in dosage form shall have been produced and handled at all stages in suitable premises under strict conditions of quality control. Proper records and recall

facilities must exist. The Committee has not reviewed a final draft of the amendment but in principle agrees with the amendments.

Domestic and foreign drugs, new and old, would be affected, and inspection of plant facilities would be necessary to ensure enforcement.

In the Section on 'Concepts of New Drug Control', it was stated that it is impossible to eliminate all risks from the use of drugs new or old. It was implied that certain side-reactions are inherent in the action of drugs. The incidence and the seriousness of side-reactions, and the toxicity of a drug in relation to its effectiveness for a given condition are the factors which eventually decide the value of the drug. It may be many years before any unanimity of opinion exists on the value of a drug. Any decision as to value must be based on experience.

Thus with a new drug, it is desirable to continue some form of surveillance for a longer period than at present, when a Notice of Compliance with the laws of the country releases the drug for sale. A mechanism for continued surveillance should involve the Directorate, the manufacturer and the practitioners using the drug. A recommendation to this effect is made in this report.

Two questions may be asked.

Are the procedures as outlined, and as described by the Director to the Committee satisfactory to ensure that the provisions of the Act, and Regulations, respecting new drugs are enforced?

Are the provisions of the Act, and Regulations, satisfactory in translating into law the concepts respecting new drugs which have been expressed?

In the opinion of the Committee the procedures of the Department are sound, but, due to the lack of personnel and increasing volume of work, the present staff is inadequate to meet the demands placed upon it. Several members of the Directorate stated that this had led to a feeling of frustration. This will lead inevitably to a deterioration in morale and loss of efficiency, which, if not remedied, will compound the difficulties faced by the Directorate.

In general the Act, and Regulations, as interpreted currently, appear to have been efficacious and satisfactory. The concepts upon which these laws have been based, the concepts of the Committee and the concepts of the Director of the Food and Drug Directorate appear to be essentially similar. A fundamental difficulty is referable to the nature of the legislation itself. Insofar as property and civil rights are concerned the responsibility for drugs is a Provincial matter. The Food and Drugs Act is intended to protect the consumer from hazards to health, and from fraud and deception arising out of the sale of drugs. Certain things may be prohibited, but *authorization* or approval of others cannot be given. This imposes definite problems in controlling the manufacture of drugs, new or old. For instance, a drug has to be 'sold' (distributed) before it has to meet the requirements of the Act and Regulations, and this implies detecting the fact that it is sold. Registration or licensing of a manufacturer or product apparently (except for Schedules "C", "D", "G") cannot be covered by legislation of this nature. In the opinion of the Committee the Regulations of the Food and Drugs Act should be supplemented and extended as indicated in the Recommendations. Of necessity, the implementation of the Recommendations will demand corresponding alterations in actual Procedures.

The interests of the Provinces in the introduction and control of new drugs, and control of drugs generally, should be mentioned. In many ways this whole problem is recognized to be of international importance; a national control, let alone provincial controls, can be criticized on rational grounds. There is reason to believe that the Provinces recognize limitations in varying provisions of Pharmacy and other Acts and would be receptive to a co-operative approach to the control of drugs. The publication of standards for new and

established drugs, in nomenclature, assay, manufacturing control, deserves consideration and discussion by Federal and Provincial Authorities.

6. Need for Expansion of the Staff of the Food and Drug Directorate and Recommendation.

From a consideration of the data presented thus far in this report it is obvious that the responsibilities of the Food and Drug Directorate are almost overwhelming at the present time, in the drug field alone, and that the demands made upon it far exceed its resources.

Almost certainly, additional work, arising from the recommendations of this Committee with regard to new drugs and from other future recommendations relating to the control of drugs and chemicals, will be expected of the Directorate, and this will make the discrepancy between work load and man power even greater.

The details of the number of persons employed by the Food and Drug Directorate, and the percentage of time, and money, spent on drugs as opposed to foods, are given in Appendix No. 7, "Report to the Special Committee of the Royal College of Physicians and Surgeons of Canada on New Drugs", by Mr. A. B. Tennenhouse, Chief Administrative Officer, Food and Drug Directorate. In this report it is noted that some 410 persons (including 50 individuals in the Narcotic and Controlled Drug Division) spend approximately 42% of their time, and about 40% of the budget of the Directorate on drugs.

It would appear to the Committee that the most urgent need for increased staff, at the moment, is in the Ottawa Headquarters of the Directorate. In any expansion undertaken, however, the emphasis must be upon scientific excellence, rather than mere numbers, if the Directorate is to perform its functions more adequately. The recruitment of well-trained, suitable physician-pharmacologists, biochemists, pharmaceutical chemists (especially if these are medically trained) may prove to be extremely difficult. The availability of suitable personnel is likely to limit recruitment of staff more than the availability of staff positions.

The Committee has discussed the increased requirements of the Food and Drug Directorate, repeatedly with Dr. Morrell, and other senior members of his staff. In making its recommendation it has considered, most carefully, the additional help needed to review new drug submissions, and the hazards arising from the use of drugs.

The Committee agrees that it is necessary to have the animal pharmacology and toxicology reviewed by specialists who are working actively in laboratories, and who should not devote more than one third of their time to reviewing new drug submissions or in other advisory or administrative work.

The Committee further believes that collaborative studies (with respect to both animal and human toxicity) could be devised, and carried out by individuals working in the Directorate, University centres (in both the basic science and clinical fields), and the pharmaceutical industry.

RECOMMENDATION:

The Committee recommends to the Minister that immediate steps be taken to increase the personnel of the Food and Drug Directorate by the addition of properly qualified persons. The Director has stated the following requirements and the Committee concurs with the recommendation.

I.—Medical Section.

- (a) Two physicians.
- (b) Two veterinary physicians.
- (c) One chemist.
- (d) One technician.

- (e) One stenographer.
- (f) Four clerk-typists.

II.—Laboratory Divisions.

- (a) Pharmacologists—5 man years=15 persons.
- (b) Pharmacists —3 man years= 9 persons.
- (c) Bacteriologists —1 man year = 3 persons.

The Committee realizes that it may be difficult to recruit the above personnel in under three years.

The Committee further recommends to the Minister that remuneration of the personnel be commensurate with the qualifications required, and that such additional facilities be provided as, in the opinion of the Director, are necessary for the proper functioning of these additional personnel.

7. *Clinical Trials in Canada.*

In the interests of public safety the Committee believes that it is desirable for at least some of the investigators conducting clinical trials to be readily available for consultation, if necessary. Access to investigators in other countries might well present difficulties. In addition, fostering the development of a comprehensive pharmaceutical manufacturing industry in Canada is in the national interest.

With respect to "new" drugs the Directorate desires but does not require reports of clinical trials conducted in this country. However, this has not been feasible in every instance. From conversations with representatives of the Canadian Pharmaceutical Manufacturers Association, L'Association des Fabricants du Quebec de Produits Pharmaceutiques, the Food and Drug Directorate, and other bodies and individuals, it is quite clear that it is difficult, if not impossible, to have adequate clinical trials of all new drugs carried out in Canada, at the present time.

The reasons for this difficulty are multiple, and include:

- (1) Philosophic considerations with respect to drug testing; it is commonly believed that testing is less challenging, less interesting, and of less scientific value than investigation of the nature and cause of disease. This view is held particularly by those best suited to carry out clinical trials, i.e., by the staff of University, teaching, or other large hospitals.
- (2) The lack of adequate personnel or the requisite facilities to carry out the detailed studies and controls necessary to the proper conduct of clinical trials.
- (3) The lack of financial support for such trials or the reluctance to accept such support directly from a pharmaceutical manufacturer.
- (4) The fact that many "new" drugs have been tested extensively, in other countries, before their introduction into Canada. This makes detailed clinical trials less attractive to Canadian investigators.

In view of this situation the Directorate has had to make certain of its decisions with respect to the release of new drugs on the basis of clinical trials conducted in the United States, to a lesser extent in the United Kingdom, and with but scant information from Canadian sources, or even none at all.

The Committee feels that it would be highly desirable to require adequate clinical trials to be conducted in Canada before a new drug is released for sale in this country. It also realizes that it is not feasible to make such a recommendation mandatory at the present time. It does, however, recommend that some means be established whereby the clinical testing of new drugs in Canada can be encouraged on an increasing scale, to achieve this end.

The Committee has considered methods by which the clinical testing of drugs could be encouraged in Canada, and has discussed this matter with various bodies and individuals and would make the following comments:

1. Already, there is a considerable amount of Clinical Investigation being carried out in this country. There is a need for much more work in the general field of the investigation of disease processes and this investigative work should be extended to studies of their specific therapy.
2. Some clinical testing of new drugs is being done by the members of Clinical Investigation, or similar highly organized, Units of the larger hospitals, at the present time.
3. Additional clinical trials are being conducted in other settings, ranging from studies on patients admitted to teaching hospital beds, (but not in the highly specialized units mentioned in paragraph 2), or in the out patient clinics of hospitals, and, in certain instances, in patients being treated by physicians in the course of their private practices (and this could be, therefore, in the doctors' offices, the patients' homes, or in hospitals, or any combination of these settings).
4. There is an urgent need for collaboration on the part of all bodies concerned with, or interested in, the clinical testing of the new drugs (which, in its simplest form, means those concerned with the production, distribution, control, investigation, and use of these therapeutic agents) to assess the magnitude of the problem, the facilities presently available, the expansion necessary to enable adequate clinical trials to be carried out in Canada (in terms of personnel and additional facilities), and the roles which each could, or would, be willing to assume in this matter.
5. It is the responsibility of the manufacturer not only to ensure that the quality of the pharmaceutical products produced is controlled properly, but to ensure that these agents (whether they be in the "new" drug category or not) have been investigated adequately from the point of view of safety and effectiveness.

The manufacturers recognize their responsibility and state that they are willing to assist in the expansion of facilities necessary for the proper conduct of clinical trials in Canada. While it is the responsibility of the manufacturer to arrange and pay for clinical trials of a new drug, it is in the public interest that trials be conducted, and be conducted in an adequate manner. In some instances it can be visualized that the public may have an over-riding interest in the results of such a trial. In such a case the expenditure of public funds, and the collaboration of an agency of the government in conducting the trials, would seem reasonable. This, in the opinion of the Committee, would be rare, and should be restricted to drugs which give promise of preventing, alleviating, or curing some disease in a remarkable way. Penicillin, cortisone, poliomyelitis vaccine, might be cited as examples. If the occasion arises, the Medical Research Council might be an appropriate agency to co-ordinate such trials.

In exploring the best means of encouraging and supporting clinical trials, the Medical Research Council should be requested to participate, and its President, Dr. R. F. Farquharson, has expressed a personal interest in so doing.

6. It is the responsibility of the Food and Drug Directorate to evaluate the results of the preclinical and clinical tests, and to require the submission of further data if, in its opinion, those made available to it do not warrant the issuance of a Notice of Compliance.

The present views of the Directorate with respect to its responsibilities for New Drugs have been discussed, on repeated occasions, with the Committee, and the latter concurs with the view that these should remain the same as in the past, "Namely to review and evaluate the data and information provided by the manufacturer to establish the safety of use of the drug for which it is proposed or recommended". See Appendix No. 6—(a) "Responsibilities for New Drugs". This document also contains the details of how the Directorate contemplates that this aim can be achieved. The Committee believes that 'outlining the objectives' of a proposed clinical trial is preferable to an 'outline', paragraph 4(b), on page 1, Appendix No. 6(a).

The Committee further believes that, in exceptional cases, the Directorate should have the power to limit clinical trials to certain qualified investigators and to suspend a clinical trial when it is in progress. It should also have the power to suspend or withdraw a Notice of Compliance, in which case the drug should revert to investigational status.

8. *The Present Regulations of the Food and Drugs Act.*

The Committee completed its study of the Regulations and decided how far it should go in proposing alterations in the requirements of the same. It was the unanimous opinion of its members that no general changes should be contemplated at this time, but that provision for a further orderly review of the whole problem should be made, on the basis of a continuing study, after this report has been submitted. Five specific recommendations for changes in the requirements of the Regulations were prepared, at a meeting held apart from the Food and Drug Directorate. The chairman subsequently discussed them with the Director, and other officials of the Department, on November 23rd, 1962, and it was after this discussion that the documents in Appendix No. 6 were prepared.

Recommendations with Respect to Changes in the Regulations, at the Present Time.

1. C.01.301:

- (1) With respect to this Section, the Committee is of the opinion that the ultimate effectiveness and safety of a "new" drug can be determined only by its use by a body of practitioners* over a sufficiently long period of time to enable qualified persons to make such an evaluation from accumulated data.

Therefore, the Committee recommends to the Minister that after a Notice of Compliance has been issued, greater controls than at present be exercised with respect to the drug, and for such time as deemed necessary by the persons qualified to evaluate these matters, unless, in the opinion of the Minister, such controls are unnecessary.

- (2) In the opinion of the Committee these controls should include:
 - (a) dispensing by prescription only,
 - (b) indications that the drug is newly introduced, or a new formulation, on labels and promotional material,
 - (c) manufacturer to report toxic reactions promptly,
 - (d) responsibility of the practitioner to report adverse reactions either directly or through appropriate local organizations,
 - (e) notification of appropriate national bodies of the issuance of Notices of Compliance.

* Persons legally qualified to use drugs in the treatment of man or animals.

2. C.01.302:

With respect to this Section the Committee recommends to the Minister that there should be added: "Substantial evidence of clinical effectiveness for the purpose intended".

3. C.01.307:

With respect to this Section the Committee recommends to the Minister that:

- (1) Subsection (a) be amended to read:

"the Minister is first informed of the objectives of the trial, the identifying name or mark by which the drug can be recognized, and the chemical structure, if known, or other specific identification of the composition of the drug".

- (2) Subsection (d) be amended to read:

"the manufacturer keeps accurate records of such distribution and of the results of such investigation and makes those records available for inspection on the request of the Director,

and

the manufacturer informs the Minister prior to distribution of the name(s) of the Qualified Investigator(s), and the institution(s) in which the investigation is to be carried out;

and

all data with respect to serious toxicity are reported immediately, both to the Minister and to the manufacturer.

Drugs included under this Section shall be known as "Investigational Drugs".

4. The Committee recommends to the Minister that the Minister be empowered to order the cessation of any clinical trial, or limit the trials to certain qualified investigators, in his discretion.
5. The Committee recommends to the Minister that the Minister be empowered to suspend or withdraw a Notice of Compliance, in which case the drug shall revert to the status of an Investigational Drug.

9. *Need for Continuing Study of the Overall Problem of Food and Drugs.*

While the terms of reference of this Committee were most specific with respect to the present procedures of the Department for dealing with new drugs, and the requirements of the Regulations, there was also contained in these terms the phrases "and any other matters that, in the opinion of the Committee, are relative to the issue". In the course of this investigation the Committee has received the greatest cooperation and the most earnest consideration of its requests for information and recommendations from the numerous and varied bodies that it consulted, visited, or with whom it could only correspond. The attached appendices contain a wealth of information that relates, in some instances at least, to matters that are much broader than those concerning "new" drugs. However, whether related to "new" drugs or not, these matters (such as drug dosages in children, carcinogenesis as it may be related to drugs, teratogenesis, blood dyscrasias, poison control, hazardous drugs, allergies as related to drugs, etc.) are of vital concern to the health of the people of Canada, and hence to this department.

It has become abundantly clear to the members of this Committee as they have proceeded with this investigation that:

- (1) There is a need for a careful and painstaking review of all drugs, not merely "new" drugs, as suggested in the preceding paragraph, and continuing surveillance.

- (2) The roles of insecticides, pesticides, and other chemicals not properly designated as "drugs", in the causation of ill health should be delineated, and controlled.
- (3) the role of drugs used in veterinary medicine should be a subject of continuing study and from the standpoint of their possible effect(s) on human health.
- (4) The matters covered in the preceding three paragraphs should be the subject of continuing intensive study by the department, through the Food and Drug Directorate, and a special committee empowered to meet with the necessary additional specialists or experts in the particular field under scrutiny.
- (5) Such a committee as envisaged in paragraph (4) should be composed of a small number of expert and dedicated individuals with overlapping appointments of short term (or relatively short term) duration, who have (or will make) the time available to carry out the continuing studies indicated above, and such others as the committee may deem advisable.

There is already in existence an Advisory Committee to the Food and Drug Directorate, known as the Canadian Drug Advisory Committee (C.D.A.C.), which was established by Order-in-Council (P.C. 1958-830) on the 12th day of June 1958. (Appendix No. 8). This is a relatively large committee consisting of some 14 members at the present time, three of whom are permanent, and others who are appointed by the Minister for periods of three years.

This Committee (C.D.A.C.) has the power to appoint or designate sub-committees, to consult with such persons as may be deemed necessary or advisable, in regard to matters respecting drugs, including Regulations made or proposed to be made for drugs under authority of the Food and Drugs Act.

RECOMMENDATION:

The Special Royal College Committee, therefore, recommends to the Minister that a *working* STANDING DRUG COMMITTEE consisting of a small number of experts, predominantly medical, with overlapping appointments of short term duration, be appointed, either from the Canadian Drug Advisory Committee, or from other sources, to consult with such persons as may be deemed necessary or advisable, in regard to matters respecting drugs, including Regulations made or proposed to be made for drugs under authority of the Food and Drugs Act, and such other matters as the STANDING DRUG COMMITTEE may deem to be in the best interests of the health of the people of Canada.

10. *Consideration of the Division of the Food and Drug Directorate into Food and Drug Sections.*

Inasmuch as this question has been raised, and referred to, in multiple submissions contained in the appendices to this report, the Committee (Royal College) is of the opinion that this matter should receive the earnest consideration of the STANDING DRUG COMMITTEE, if and when appointed, and that any such move, if contemplated, should avoid overlapping of costly administrative, inspection, and laboratory services, and should have the delineation of the functions of the respective sections determined on the basis of the advice of competent professional and technical authorities.

11. *Further Comments on Matters Contained in the Appendices Attached to this Report.*

As mentioned in Section 9, above, many of the appendices to this report contain detailed observations and recommendations with respect not only to "new" drugs but also to the overall problems of the control of the importation, manufacture, and marketing, of drugs in Canada. There also is a need for a careful consideration of the roles that certain substances, not properly designated as drugs, occupy or might occupy, with respect to the health of the people of Canada.

These matters in the opinion of the Committee, should be the subject of a careful and detailed review by the STANDING DRUG COMMITTEE, if and when appointed by the Minister, as recommended previously, and, which, after consultation with the appropriate bodies, or other experts, should consider possible further revisions or additions to the Regulations. Particular attention is drawn to the recommendations and comments contained in Appendix No. 48.

12. *Summary of Recommendations.*

(1) *Recommendation with Respect to Expansion of the Food and Drug Directorate.*

The Committee recommends to the Minister that immediate steps be taken to increase the personnel of the Food and Drug Directorate by the addition of properly qualified persons. The Director has stated the following requirements and the Committee concurs with the recommendation.

I—*Medical Section.*

- (a) Two physicians.
- (b) Two veterinary physicians.
- (c) One chemist.
- (d) One technician.
- (e) One stenographer.
- (f) Four clerk-typists.

II—*Laboratory Division.*

- (a) Pharmacologists—5 man years = 15 persons.
- (b) Pharmacists—3 man years = 9 persons.
- (c) Bacteriologists—1 man year = 3 persons.

The Committee realizes that it may be difficult to recruit the above personnel in under three years.

The Committee further recommends to the Minister that the remuneration for the personnel so added to the Food and Drug Directorate establishment be commensurate with the qualifications required, and that such additional facilities be provided as, in the opinion of the Director, are necessary for the proper functioning of these additional personnel.

(2) *Recommendations with respect to changes in the Regulations, at the present time.*

1. C.01.301:

- (1) With respect to this Section, the Committee is of the opinion that the ultimate effectiveness and safety of a "new" drug can be determined only by its use by a body of practitioners* over a sufficiently long period of time to enable qualified persons to make such an evaluation from accumulated data.

* Persons legally qualified to use drugs in the treatment of man or animals.

Therefore, the Committee recommends to the Minister that after a Notice of Compliance has been issued, greater controls than at present be exercised with respect to the drug, and for such time as deemed necessary by the persons qualified to evaluate these matters, unless, in the opinion of the Minister, such controls are unnecessary.

- (2) In the opinion of the Committee these controls should include:
- (a) dispensing by prescription only.
 - (b) indications that the drug is newly introduced, or a new formulation, on labels and promotional material.
 - (c) manufacturer to report toxic reactions promptly.
 - (d) responsibility of the practitioner to report adverse reactions either directly or through appropriate local organizations.
 - (e) notification of appropriate national bodies of the issuance of Notices of Compliance.

2. C.01.302:

With respect to this Section the Committee recommends to the Minister that there should be added: "Substantial evidence of clinical effectiveness for the purpose intended".

3. C.01.307:

With respect to this Section the Committee recommends to the Minister that

- (1) Subsection (a) be amended to read:
"the Minister is first informed of the objectives of the trial, the identifying name or mark by which the drug can be recognized, and the chemical structure, if known, or other specific identification of the composition of the drug";
- (2) Subsection (d) be amended to read:
"the manufacturer keeps accurate records of such distribution and of the results of such investigation and makes those records available for inspection on the request of the Director;
and
the manufacturer informs the Minister prior to distribution of the name(s) of the Qualified Investigator(s), and the institution(s) in which the investigation is to be carried out;
and
all data with respect to serious toxicity are reported immediately, both to the Minister and to the manufacturer".

Drugs included under this Section shall be known as "Investigational Drugs".

- (4) The Committee recommends to the Minister that the Minister be empowered to order the cessation of any clinical trial, or limit the trials to certain qualified investigators, in his discretion.
- (5) The Committee recommends to the Minister that the Minister be empowered to suspend or withdraw a Notice of Compliance, in which case the drug shall revert to the status of an Investigational Drug.
- (3) *Recommendation with respect to the establishment of a Standing Drug Committee.*

This Committee recommends to the Minister that a *working* STANDING DRUG COMMITTEE, consisting of a small number of experts, predominantly medical, with overlapping appointments of short term duration, be appointed

either from the Canadian Drug Advisory Committee, or from other sources, to consult with such persons as may be deemed necessary or advisable, in regard to matters respecting drugs, including Regulations made or proposed to be made for drugs under authority of the Food and Drugs Act, and such other matters as the STANDING COMMITTEE may deem to be in the interests of the health of the people of Canada.

13. Conclusion.

In conclusion, the Committee, is indebted to the Minister, the Deputy Minister, and the Director of the Food and Drug Directorate and the senior members of his staff, and to all bodies and individuals who have attended the interviews, and made submissions to the Committee, during this investigation, for their tremendous interest, long hours of work, unfailing courtesy, and friendly co-operation.

The Committee further wishes to emphasize that the Directorate has operated under the most difficult conditions, particularly in the last few years, and it is astonishing that it has been able to establish an enviable record of accomplishment. This record of conscientious and fair-minded dealing with manufacturers, pharmacists, and practitioners, is attributable, in large part, to the Director. Beset on the one hand by manufacturers requesting speedy action, and on the other by a duty to protect the public from hazards of which they (and he) might be unaware, his course of action deserves the highest commendation. The Committee feels that the Director has performed his duties with the care, wisdom, and high motivation the public expects from its senior servants.

All of which is respectfully submitted.

(signed) F. S. BRIEN

F.S. Brien, B.A., M.B., F.R.C.P. (Lond),
F.R.C.P. (Canada), F.A.C.P.
Chairman.

(signed) R. R. DUFRESNE

R. R. Dufresne, B.A., M.D., F.R.C.P.
(Canada),
Member.

(signed) E. A. SELLERS

E. A. Sellers, M.D., Ph.D.,
Member.

INDEX OF APPENDICES

1. Material for Committee of the Royal College of Physicians and Surgeons Re: New Drug Submissions.
2. "The Impact of New Drug Regulations on Physicians", by George P. Larrick, Commissioner of Food and Drugs, U.S. Department of Health, Education, and Welfare.
3. "New Development in Drug Regulation", by Ralph G. Smith, M.D., Acting Director, Bureau of Medicine, Food and Drug Administration, U.S. Department of Health, Education, and Welfare.
4. Report of the Visit of the Royal College Committee to the Food and Drug Administration in Washington.
5. Submission by the Medical Section, C.P.M.A., on behalf of the Canadian Pharmaceutical Manufacturers Association, to the Committee for the Review of New Drug Procedures, Royal College of Physicians and Surgeons of Canada, October 1962.
6. Letter from Dr. C. A. Morrell—November 30, 1962, with enclosures—
 - (a) Responsibilities for New Drugs.
 - (b) Testing of Imported Drugs.
7. Report to the Special Committee of the Royal College of Physicians and Surgeons of Canada on New Drugs, by Mr. A. B. Tennenhouse, Chief Administrative Officer, Food and Drug Directorate.
8. P.C. 1958-830 (covering the establishment of the Canadian Drug Advisory Committee).
9. Canadian Paediatric Society—Société Canadienne de Pédiatrie—Submission to the Special Committee on Drugs of the Royal College of Physicians and Surgeons of Canada.
10. Submission to Special Committee on New Drugs—Pharmacological Society of Canada—Société Pharmacologique du Canada.
11. Brief of the Canadian Veterinary Medical Association—L'Association Canadienne des Médecins Vétérinaires—together with a letter from its President—Dr. J. Archibald.
12. University of Toronto, Faculty of Pharmacy, Views Respecting Canadian Drug Legislation.
13. Letter from Roger Larose, Dean, Faculty of Pharmacy, University of Montreal.
14. Comments from Dr. J. R. Murray, Director, School of Pharmacy, University of Manitoba, on points raised by the Chairman, Special Committee of the Royal College, on New Drugs.
15. Concerning Control of Drugs—letter from M. J. Huston, Dean of Pharmacy, University of Alberta.
16. Letter from A. W. Matthews, Dean, Faculty of Pharmacy, University of British Columbia.
17. Proposals from Dr. Armand Frappier, Directeur, Institut de Microbiologie et d'Hygiène de l'Université de Montréal.
18. Letter from Dr. J. K. W. Ferguson, Director, Connaught Medical Research Laboratories, University of Toronto.
19. Some Observations on the Testing of Virus Vaccines, by Dr. A. J. Rhodes, Director, School of Hygiene, University of Toronto.

20. Correspondence to and from Dr. J. Wendell Macleod, Executive Secretary, The Association of Canadian Medical Colleges.
21. Information on New Drugs, prepared by J. G. Aldous, Professor of Pharmacology, Dalhousie University, Halifax, N.S., and approved by the Faculty of Medicine for Special Committee of the Association of Canadian Medical Colleges (should read "Special Committee on New Drugs of the Royal College of Physicians and Surgeons of Canada").
22. Comment re Special Committee on New Drugs, by A. Fidler, Professor of Medicine, University of Ottawa, Ottawa, Ontario.
23. Letter and Reprint from Dr. E. M. Boyd, Head, Department of Pharmacology, Queen's University, Kingston, Ontario.
24. Communication from Dr. K. J. R. Wightman, Professor of Medicine, University of Toronto, "Observations Regarding Legislation on New Drugs".
25. Communications from the University of Western Ontario—by Dean O. H. Warwick, and Dr. R. A. H. Kinch, Professor of Obstetrics and Gynaecology.
26. Communications from the University of Saskatchewan, by Dr. A. A. Bailey, Professor of Medicine, and Dr. G. M. Wyant, Professor of Anaesthesia.
27. Report of Faculty of Medicine, University of Alberta to the Special Committee on New Drugs of the Association of Canadian Medical Colleges (should read "of the Royal College of Physicians and Surgeons of Canada").
28. Memorandum to the Special Committee on New Drugs, from the Dean's Committee on Therapeutics, Faculty of Medicine, University of British Columbia.
29. Letter from Dr. John C. Laidlaw, President, Canadian Society for Clinical Investigation.
30. Communication from the Canadian Medical Association—containing extract from its submission to the Royal Commission on Health Services.
31. Submission from Dr. D. L. McNeil, Chairman, Committee on Pharmacy, Canadian Medical Association.
32. Letter from Dr. K. J. R. Wightman, relative to Drug Testing.
33. Correspondence from the Canadian Dental Association—L'Association Dentaire Canadienne.
34. Memorandum of the Canadian Pharmaceutical Association Inc.
35. Suggestions for the Handling of Investigational Drugs in Hospitals, by the Canadian Society of Hospital Pharmacists.
36. Letter from Verdun Protestant Hospital regarding The Early Clinical Drug Evaluation Unit of the Verdun Protestant Hospital.
37. Mémoire présenté à la Commission Royale d'Enquête sur les Services de Santé par L'Association des Fabricants du Québec de Produits Pharmaceutiques.
38. Letter to Mr. André Désautels, Registrar, College of Pharmacists of the Province of Quebec.
39. Letter from Mr. R. E. Curran, Q.C., Office of the Legal Adviser, Department of National Health and Welfare, Ottawa.
40. Correspondence with The Canadian Medical Protective Association, Ottawa.
41. Initial Correspondence from Royal College of Physicians and Surgeons of Canada setting up the Special Committee on New Drugs.
42. Correspondence to and from Dr. C. A. Morrell.
43. Data re Staff of Food and Drug Directorate—Personnel Record Sheets.

44. Letter from the Deputy Minister of National Health relative to Bill C-3, together with a copy of Bill C-3.

45. Brief to the Royal Commission on Health Services from the Medical Section of the Canadian Pharmaceutical Manufacturers Association.

46. Letter to Independent Drug Companies and List of those to whom it was sent.

47. Comments of American Medical Association on Proposal to Amend Regulations Pertaining to New Drugs for Investigational Use, by F. J. L. Blasingame, M.D., Chicago, in the J.A.M.A. of December 1, 1962.

48. Important Comments and Recommendations contained in Submissions made to the Committee.

OFFICIAL REPORT OF PROCEEDINGS AND EVIDENCE

This edition of the Minutes of Proceedings and Evidence contains the text of Evidence in the language in which it was given, and a translation in English of the French texts printed in the Evidence.

HOUSE OF COMMONS

First Session—Twenty-sixth Parliament

1963

SPECIAL COMMITTEE

ON

FOOD AND DRUGS

Chairman: Mr. HARRY HARLEY

MINUTES OF PROCEEDINGS AND EVIDENCE

No. 2

TUESDAY, OCTOBER 8, 1963

Statement by The Honourable Judy LaMarsh, Minister of National Health
and Welfare

ROGER DUHAMEL, F.R.S.C.
QUEEN'S PRINTER AND CONTROLLER OF STATIONERY
OTTAWA, 1963

SPECIAL COMMITTEE ON FOOD AND DRUGS

Chairman: Mr. Harry Harley

Vice-Chairman: Mr. Rodger Mitchell

and Messrs.

Armstrong	Enns	Orlikow
Asselin (<i>Richmond-</i> <i>Wolfe</i>)	Fairweather	Pennell
Baldwin	Francis	Roxburgh
Basford	Gauthier	Rynard
Cashin	Howe (<i>Hamilton South</i>)	Valade
Casselman (Mrs.)	Macaluso	Whelan
Côté (<i>Longueuil</i>)	Marcoux	Willoughby—24
	Nesbitt	

(Quorum—13)

Gabrielle Savard,
Clerk of the Committee.

Note:—Mr. Marcoux and Mr. Macaluso replaced Mr. Patterson and Mr. Pilon after the first meeting.

ORDERS OF REFERENCE

THURSDAY, August 1, 1963.

Ordered,—That the name of Mr. Marcoux be substituted for that of Mr. Patterson on the Special Committee on Food and Drugs.

FRIDAY, August 2, 1963.

Ordered,—That the Special Committee on Food and Drugs be empowered to sit while the House is sitting.

WEDNESDAY, October 2, 1963.

Ordered,—That the name of Mr. Macaluso be substituted for that of Mr. Pilon on the Special Committee on Food and Drugs.

Attest.

LÉON-J. RAYMOND,
The Clerk of the House.

MINUTES OF PROCEEDINGS

TUESDAY, October 8, 1963.

(2)

The Special Committee on Food and Drugs met this day at 9:40 a.m. the Chairman, Mr. Harry Harley, presiding.

Members present: Messrs. Asselin (*Richmond-Wolfe*), Baldwin, Basford, Côté (*Longueuil*), Enns, Fairweather, Harley, Macaluso, Marcoux, Mitchell, Nesbitt, Roxburgh, Rynard, Valade, Whelan and Willoughby.—(16)

In attendance: The Honourable Judy LaMarsh, Minister of National Health and Welfare.

The Chairman observed the presence of a quorum. He welcomed the Minister and invited her to address the Committee.

Miss LaMarsh read a prepared statement and was questioned thereon.

The Chairman thanked the Minister and after she retired, he proceeded to announce the names of the members of the Subcommittee on Agenda and Procedure, to act with him, as follows: Messrs. Fairweather, Francis, Gauthier, Mitchell, Orlikow and Rynard.

The Chairman presented the first report of the Subcommittee on Agenda and Procedure dated October 1st, containing the following recommendations:

1. That pursuant to its Order of Reference of July 26, 1963, the Committee print 750 copies in English and 500 copies in French of its Minutes of Proceedings and Evidence.
2. That the Committee hold its meetings in committee rooms located in the West Block, when they are available.
3. That the Committee meet on Tuesday and Thursday mornings at 9:30 a.m.
4. That Interpreters be present at each meeting.
5. That the Chairman recommend to Mr. Speaker that the per diem sum to be paid to professional and/or expert witnesses from outside the Public Service, duly summoned before the Committee, be set at \$50.00.
6. That associations or persons wishing to present briefs be required to send a sufficient number of copies for the use of the members one week in advance of the formal presentation of their submission.
7. That the Committee deal first with "Insecticides and Pesticides".
8. That the Minister of National Health and Welfare be invited to make a statement to the Committee on Tuesday, October 8, 1963.
9. That officials of the Departments of Agriculture, Fisheries, Forestry, Northern Affairs and National Health and Welfare, and of the Food and Drug Directorate be called to appear before the Committee.
10. That the publications mentioned in a letter from Dr. Morrell, Director of the Food and Drug Directorate, to the Chairman be supplied to the Members of the Committee if they so desire.

Recommendation No. 5 was amended by adding at the end "plus living and travelling expenses".

After discussion, Mr. Marcoux moved, seconded by Mr. Baldwin,

That the first report of the Subcommittee on Agenda and Procedure as amended be now concurred in. *Carried unanimously.*

The Chairman submitted to the Committee a tentative schedule for the coming meetings, which the Committee approved.

At 10:30 a.m. the Committee adjourned until Thursday, October 10, at 9:30 a.m.

Gabrielle Savard,
Clerk of the Committee.

EVIDENCE

TUESDAY, October 8, 1963.

The CHAIRMAN: Gentlemen and Miss LaMarsh, as you will recall from our previous meeting the quorum was set at 13; we now have 13 members present and we will proceed with our first committee meeting.

We are very honoured and pleased to have this morning with us the Minister of National Health and Welfare who will make a statement to the committee.

At this time I would ask Miss LaMarsh to make her opening statement to this committee.

Hon. JUDY V. LAMARSH (*Minister of National Health and Welfare*): Mr. Chairman and gentlemen, I am very pleased that finally this committee has commenced its task. The people of Canada will be most interested in the deliberations and recommendations of a parliamentary committee that is concerned with two subjects that are vital to the health of the nation. I look forward personally to your report as a carefully considered assessment of the problems that we face, and of the role of government in relation to the problems of pesticide residues in food, and the safety and cost of drugs.

The events of recent years have raised a widespread apprehension about the adverse or deleterious effects of drugs and pesticides. I think these experiences have made us all more aware that, while these products of human ingenuity and enterprise have tremendous benefits for mankind, they also present serious hazards. Of course, this dilemma is not unique in our modern world. The automobile confers great advantages for us all, but at the same time it is the instrument that kills and maims a great many people. I am afraid that we have become too blasé about the death tolls on the highways. Although this analogy can be made to emphasize the dilemma, it does not relieve us of the obligation to do everything within our power to eliminate the avoidable health hazards associated with drugs, and with pesticides and chemical additives in foods.

I think your study will emphasize that the responsibility for the safe use of pesticides and drugs is shared by manufacturers, by those who sell and use these materials, and by government; in the case of prescription drugs, of course, doctors bear a key responsibility. As the problems become more complex, however, I think the role of government becomes increasingly important. Only government can reconcile the divergent positions and views of different interests; and government, of course, has the responsibility to protect the vital public interests. As the Minister of National Health and Welfare, I will value your views on the role and work of my department in protecting the public health.

So far, I have referred to the health hazards of drugs and pesticides as though they were one and the same. In fact, the problems posed by pesticide residues and other chemical contaminants in food are different in many respects from those that we face in respect to drugs. Both are major fields of study in themselves, and it is most appropriate that you should examine them separately.

Finally, your terms of reference include a study of the cost of drugs. This also has been the subject of considerable public controversy in recent years. I trust that you will hear a variety of witnesses who are competent on

this complex issue. I am sure that you will be interested in the report of the restrictive trade practices commission on the manufacture, distribution, and sale of drugs that was published in January of this year. The price of drugs is vitally important, in relation to the cost of many other commodities, since it does govern the availability of therapeutic agents essential to the health of many in our society. I know that the government and the nation as a whole will be keenly interested in the views of this committee on the cost of drugs.

I understand that your study will commence with the subject of pesticide residues in food, which is one of the topics in the news at the moment.

The officials of my department are available at the committee's convenience to present the information that they have on this subject. I am prepared, as you may wish, to explain our policies on the subjects of your study.

It is my wish that you will find this an interesting committee and no longer than you wish to make it. I hope you will call anyone you feel may throw light on the subjects you will be studying. The officials of my department as well as myself will afford you our fullest cooperation.

The CHAIRMAN: Thank you very much, Miss LaMarsh.

I wish to thank Miss LaMarsh for her attendance this morning but before she leaves are there any members of the committee who wish to address a general question to the minister.

Mr. BALDWIN: Yes, Mr. Chairman. As a general question—and, I am sure the minister has given study to this whole problem—do you feel, without committing yourself, after having read, as I am sure you have, Doctor Rachel Carson's book and the evidence given by Miss Carson at various meetings, that there is any substantial import to the claims which she has made and the alarming situations she has put forth in connection with the use of pesticides. Of course, this is a very general question.

The CHAIRMAN: I would think, Mr. Baldwin, this is probably the job of the committee to assess.

Mr. BALDWIN: I just asked the question and perhaps the minister might care to answer it.

Miss LAMARSH: It looks as if you want to start with a headline right off. I would like to reserve my own opinion in that connection. However, I am sure you have noticed, as I have, a number of press reports lately in connection with this book. There is what might be called a form of hysteria resulting from it. These are not my words; I am quoting only what I have seen in the press. There have been recent meetings held in Canada in which people have expressed opinions, as well as in American periodicals, and it will be up to you to evaluate the book and other evidence brought before this committee, particularly in respect of our own country. It will be up to you to say whether, in your opinion, there has been an overstatement.

The CHAIRMAN: Have you a question, Mr. Valade?

Mr. VALADE: My question is directed to you, Mr. Chairman, rather than the minister. I believe three topics have been put forth as the major points to be discussed: the role of government in the control of drugs, the cost of drugs, and the pesticides.

I was wondering, Mr. Chairman, which one will be considered as the most important and discussed first in this meeting. When we sat in committee last year the price of drugs was considered to be one of the last subjects to be discussed by the committee. However, that point seems to have been emphasized by the minister and I am wondering if she is pressing more on that point than the others.

The CHAIRMAN: Perhaps we could answer this question later on.

The steering committee has met and it will be reporting to the full

committee in due course, making certain recommendations as to which topics should be considered first. May we wait until we are ready for that.

Mr. FAIRWEATHER: The royal commission on health has considered the cost of drugs. It would be very essential, in my opinion, to have that report before we discuss this subject.

Miss LAMARSH: We hope to have that report at the end of the year.

Mr. NESBITT: Mr. Chairman, this is a question directed either to yourself or to the minister. Is it, in your opinion, within the terms of reference of this committee for the committee, after having discussed various topics which we are to look into and on which we are to hear evidence, to make recommendations concerning advertising of patent medicines, pesticides and so on?

Miss LAMARSH: I would think since we are interested in the departments of government role that if any recommendations are forthcoming from the committee in this regard they would be included with the others.

Mr. NESBITT: There is also the question of extravagant claims made for a number of different products.

Mr. MITCHELL: Well, you try and put something in the paper in that connection and you will see how far you go. In my opinion, it is well controlled at the present time. I would like to ask the deputy minister if he does not agree with my contention.

The CHAIRMAN: Are there any other questions to be directed to the minister? If there are no further questions it is not our wish to delay her from her other duties. As we all know, the minister is busy.

If there are no further questions to ask the minister I would ask that she be free to leave and then we will proceed with the remainder of the agenda.

Mr. VALADE: Before the minister leaves may I ask what her comprehension is of the words "government control of drugs". As may be recalled, she spoke about the role of government in the control of drugs. The minister said earlier that the doctors were responsible for their prescriptions in the case of most potent drugs.

Miss LAMARSH: You have asked what I think the role is. Surely it arises first from your understanding of whatever need there is and then to see that the machinery is available to carry through on it. We have the Food and Drug Act, as you well know. However, there are certain other statutes which are not my responsibility. We do produce regulations in respect of the control of prescription and non-prescription drugs. There are some regulations about advertising as well. It will be up to you to ascertain the need and then, if necessary, to ascertain whether the tools exist; if they do not it is then your responsibility to make recommendations on further controls which, in your opinion, should be taken by the government.

Mr. VALADE: Does the control concern the dispensing or standardizing of drugs?

Miss LAMARSH: Our control is over manufacturing, which consists of the taking of samples and so on; it is not over the dispensing, which is the responsibility of the provincial authorities and the medical people, druggists and so forth.

Mr. BALDWIN: Mr. Chairman, I would like to bring up a point at this time as it may prove to be very beneficial to us later on. Assuming that we get to this question of the cost of drugs, we may come to the conclusion that there is something which is being improperly done and, if this should be the case I think it would be useful if, before that time, we were to have the legal division of the minister's department represented, possibly in collaboration with the Minister of Justice, in order that they may define the division

of jurisdiction between the provinces and the federal government in respect of what we can do in this connection, and what recommendations we are free to make while still keeping within the proper jurisdiction of the federal government. I know you mentioned the restrictive trade practices recommendations and although we do have certain jurisdiction there I am thinking of recommendations and suggestions in the other regard of which I spoke. I do know there are limits as to what we can do.

To repeat myself, I do think it might be useful if some time later on during the course of our deliberations we should have someone available to give us a general legal opinion which would serve as a guide to us in our future deliberations.

Miss LAMARSH: I would be very pleased to provide you with Mr. Curran in order that you may have a definitive legal opinion from him, or to have any other lawyer provide it for you.

Mr. BALDWIN: I hope when you say that you are referring to this question only and not to opinions generally.

Miss LAMARSH: No, to this question only.

The CHAIRMAN: If there are no other questions for the minister I would like on behalf of this committee to thank the minister for taking time out from her busy schedule in order to attend and address this committee. We thank you very much, Miss LaMarsh, and are looking forward to the full cooperation of yourself and officials of your department, which I am sure we will receive.

Mr. VALADE: Are you through with smoking?

Miss LAMARSH: I do not know whether that is a pesticide or what you would call it. I know that if I resume smoking my friend here will tell everyone in his constituency and everyone across Canada.

Mr. ROXBURGH: There is another very fine habit and an old one which more or less has disappeared, and that is chewing.

Miss LAMARSH: I have heard of that but have not taken it up.

The CHAIRMAN: Gentlemen, the next item on the agenda is to announce the membership of the steering committee; this committee consists of Messrs. Fairweather, Francis, Gauthier, Mitchell, Orlikow, Dr. Rynard and the chairman.

At this time I would like to read the first report of the steering committee together with the recommendations made by them.

Special Committee on Food and Drugs
Steering Subcommittee Report

TUESDAY, October 1, 1963.
10:30 a.m.

Members present: Messrs. Harley, Mitchell, Fairweather, and Francis. Your subcommittee recommends as follows:

1. That pursuant to its order of reference of July 26, 1963, the committee print 750 copies in English and 500 copies in French of its minutes of proceedings and evidence.

Is it the wish of the committee to discuss each item individually or would it perhaps be better if I read the complete report and then at that time we could throw the meeting open for questioning in that connection.

Mr. NESBITT: Let us hear the full report first, Mr. Chairman.

The CHAIRMAN: All right. I continue.

2. That the committee hold its meetings in committee rooms located in the west block, when they are available.
3. That the committee meet on Tuesday and Thursday mornings at 9:30 a.m.
4. That interpreters be present at each meeting.
5. That the chairman recommend to Mr. Speaker that the per diem sum to be paid to professional and/or expert witnesses from outside the public service, duly summoned before the committee, be set at \$50.00.
6. That associations or persons wishing to present briefs be required to send a sufficient number of copies for the use of the members one week in advance of the formal presentation of their submission.
7. That the committee deal first with "Insecticides and Pesticides".
8. That the Minister of National Health and Welfare be invited to make a statement to the committee on Tuesday, October 8, 1963.
9. That officials of the Departments of Agriculture, Fisheries, Forestry, Northern Affairs and National Health and Welfare, and of the food and drug directorate be called to appear before the committee.
10. That the publications mentioned in a letter from Dr. Morrell, director of the food and drug directorate, to the chairman be supplied to the members of the committee if they so desire.

As I have stated, this is your sub-committee's report on agenda and procedure. Would you like to go through the recommendations and discuss them one at a time at this time?

Mr. MARCOUX: Mr. Chairman, I was told last night I was on this committee. I was not aware of that before that time. I understood I was replacing Mr. Gauthier.

The CHAIRMAN: No, Mr. Patterson. I believe this was requested by the whip of your party.

Mr. MITCHELL: He does not have a party.

The CHAIRMAN: By the whip of the Social Credit party.

Mr. FAIRWEATHER: Which one? Which man has the Toni.

The CHAIRMAN: Actually that was done on August 1, before the house recessed for the summer holidays.

Is there any discussion in connection with the recommendations of your steering committee?

Mr. ASSELIN (*Richmond-Wolfe*): Mr. Chairman, I was wondering about the sitting times.

Mr. BASFORD: This committee seems to be conflicting with every other committee which is meeting. I realize that perhaps the steering committee has looked into this matter but would it not be possible to meet at some time which would not be likely to conflict with the other committees. I am thinking of perhaps Mondays and Fridays.

Mr. ASSELIN (*Richmond-Wolfe*): Is it necessary to sit twice a week?

The CHAIRMAN: I do think that two meetings a week are necessary because of the volume of work we have to do.

Mr. NESBITT: I agree with my friend that it might be better not to have so many conflicts with other committee meetings. However, on the other hand, I think it is common knowledge that over the years committee meetings held on Mondays and Fridays make it very difficult for some members. Let us face it, there is a likelihood of members being unable to attend the meetings on those days for one reason or another. Also, we do know that Wednesday

morning is a difficult time for all of us. I do think that it would be best if we held these committees on Tuesdays and Thursdays. If there is a serious conflict perhaps some other time of the day might be looked into.

Mr. ASSELIN (*Richmond-Wolfe*): In view of the raise we voted ourselves awhile ago, I do feel we could use the Mondays and Fridays.

Mr. NESBITT: I am here on Mondays and Fridays so it does not bother me. However, there are occasions when some members have to be absent. Some have business to do in their own constituency, not necessarily government business, and generally they select a Monday or a Friday to do this, and for obvious reasons; they do not have to spend the day travelling.

Mr. BALDWIN: We have experienced this situation during the last four or five years when there have been so many committees meeting at one time. It has always posed a problem to us. Perhaps, Mr. Chairman, you might take this matter up with the other committee chairmen when you get together with them. In this way we might be able to work our problem out. A detailed examination of the roster of each committee is necessary. In this way it is possible we may avoid sittings which conflict too much.

Mr. ROXBURGH: Mr. Chairman, is there not an over-all organization which assists in setting up these committees? In my constituency we have a set up where they submit the days on which their meetings are called and so on, and in this way eventually things are worked out to the satisfaction of all. Is there no organization set up which would look into this problem and then if there were three other committees sitting at the same time could not this organization work the times out in a way so that a number of committees would not have to sit at the same time.

Mr. MITCHELL: Perhaps we could meet at 8 o'clock in the evening.

Mr. VALADE: Mr. Chairman, rather than wasting two hours on this discussion perhaps we could leave that matter to the Chairman and the steering committee. It might be that the committee could decide a week ahead of time when the sittings will be for the coming week. Perhaps the Chairman could arrange the sittings with the clerk.

Mr. ASSELIN (*Richmond-Wolfe*): Have we permission to sit while the house is sitting?

The CHAIRMAN: Oh, yes. In the not too distant future we will be faced with the calling of witnesses from outside. In these cases if they commenced with their evidence, say, during an evening session there would be a good possibility they would have to be held over another day, and it might run into two or three days because there is a day in between our sittings.

Mr. WHELAN: I would suggest, Mr. Chairman, that we not worry about when the house is sitting because if we in the house contribute as little to the country in the future as we have during the last while there will be no need to worry about it.

The CHAIRMAN: Perhaps this matter could be left in the hands of the steering committee for the time being.

Is there any discussion required in connection with the first item, the number of copies to be printed, namely 750 in English and 500 in French? To be quite frank with you, we chose this number, thinking of the number of copies printed last year and the number of copies which were never used and which are still at the printers.

Mr. WHELAN: In connection with these copies which are being printed,—and I am not referring to the copies of this committee's hearings but another one which they sent to Toronto—it took six weeks to get the proceedings. I am referring to a hearing before the banking and commerce committee.

Are we going to have to wait that long for the copies in respect of this committee?

The CHAIRMAN: It is my understanding that we will have the proceedings printed immediately. I know this is what was done in the past.

Mr. WHELAN: If these copies are not forthcoming it makes it most inconvenient for all concerned.

The CHAIRMAN: The steering committee can look into this matter. However, as far as I know, they would be printed here and would be available to us within one or two days.

Mr. COTE (*Longueuil*): Would those reports which have not been used be available to us.

The CHAIRMAN: Yes. I thought all members of the committee received the four reports of the previous committee. They should have had their reports at this time.

Mr. VALADE: Mr. Chairman, on this question of reports, may I suggest to you that it might be a good idea if the reports of last year's sittings of the committee were forwarded to the members of this committee.

The CHAIRMAN: We did that.

Mr. VALADE: I am sorry, Mr. Chairman, but I thought you were referring to the future sittings of this committee.

The CHAIRMAN: These were sent out. Also, these reports will be printed as an appendix to our first meeting.

The second item was that the committee hold its meetings in a committee room located in the west block. The feeling of the steering committee was that it is a larger building, as a result of which there are more rooms available away from the centre block and it would be preferable to hold the meetings here.

We have asked for interpreters to be present at each meeting, and we have an interpreter with us this morning. If it is the wish of the committee, there will be one present every morning. We felt this should be done.

The fifth item is that the Chairman recommend to Mr. Speaker that the per diem sum to be paid to professional and/or expert witnesses from outside the public service, duly summoned before the committee, be set at \$50. The feeling of the steering committee was that if we called an expert witness he should be compensated for his time and that \$50 a day seemed a reasonable sum to allow.

Mr. COTE (*Longueuil*): Is \$50 a day set out in your report?

The CHAIRMAN: Yes.

An hon. MEMBER: Including expenses?

The CHAIRMAN: No; it just says \$50 a day.

Mr. ASSELIN (*Richmond-Wolfe*): In other words, he has to pay his own expenses.

Mr. FAIRWEATHER: He gets his expenses as well.

The CHAIRMAN: In that connection we will have to speak to the Speaker of the house who administers this fund.

Mr. FAIRWEATHER: He should get his expenses and \$50.

Mr. ROXBURGH: His air fare alone might be in excess of that amount.

The CHAIRMAN: It seems to be the opinion of at least some of the members of this committee that the per diem sum should be set at \$50 a day, plus expenses.

Mr. VALADE: Mr. Chairman, although I do not wish to look too greedy in this connection, last year we had some witnesses who were in attendance for a full week, or at least close to a week, and if you figured the expenses plus \$50 a day it might come to \$500 a week for the one witness.

Mr. FAIRWEATHER: If he is a professional witness that is little enough.

Mr. VALADE: I just wondered if we could figure out a maximum for a five day period or something of that nature. This is just a suggestion as, personally, I think \$50 a day plus expenses is quite an amount of money if you have to keep an expert here, for some reason or another, for a period of five or six days.

The CHAIRMAN: I really would not anticipate keeping a witness here that length of time. I would hope that we would sit in the morning and, if possible, continue on later in the day. This is the reason that the committee requested permission to sit during the sittings of the house.

Mr. VALADE: During the last sittings it proved impossible to do that. I am sure that Dr. Brien was here more than one day.

The CHAIRMAN: But, as far as the committee was concerned, he was here only the one day.

Mr. BASFORD: What is a professional or expert witness? Would this include the representative of a manufacturing firm, for example, who wished to make a representation.

The CHAIRMAN: No. I am speaking here of people who have been requested by the committee to attend. It says here in the recommendation, "duly summoned before the committee". If a manufacturer wishes to make representations to us he has approached us rather than we approaching a representative of their firm.

Mr. BASFORD: He might consider himself an expert whereas we might not.

The CHAIRMAN: The wording in the recommendation takes care of this; it says: "duly summoned before the committee". If he wishes to appear before us it is at his own expense.

Is there any further discussion concerning the amount of money or anything else in this regard?

Mr. NESBITT: As I understand it, Mr. Chairman, the steering committee, including yourself, are going to recommend to the Speaker that this is for professional witnesses duly summoned by the committee—that is, professional or expert witnesses—and that it should be \$50 a day plus expenses, which would include both travel and living.

The CHAIRMAN: Yes. I think the recommendation to the Speaker would be to that effect, that we recommend the per diem sum to be paid to professional and/or expert witnesses from outside the public service, duly summoned before the committee, be set at \$50 a day plus living and travelling expenses. Is that agreed?

Some hon. MEMBERS: Agreed.

Mr. VALADE: I had that in mind but would add that there should be a set maximum figure, possibly \$200 a week, in case the witnesses were required to stay over for a longer period of time than one day. In this way the committee would know how much it was allowed to spend on any one particular witness.

Mr. FAIRWEATHER: I think if a professional man has to spend a week in Ottawa beholding to this committee \$50 a day is little enough.

The CHAIRMAN: If the committee is going to meet on Tuesdays and Thursdays and if an expert witness had not completed his testimony on the Thursday I am sure that he would proceed to his home and come back the

following Tuesday rather than stay here. I do not think he would have the time at his disposal to stay a full week.

Mr. VALADE: It was just a suggestion on my part to save money for the government.

Mr. MARCOUX: I see no problem or difference between one witness coming and staying for two or three days and a different witness for each day; the same expense is involved.

The CHAIRMAN: Perhaps we should move on to the next point, namely that associations or persons wishing to present briefs be required to send a sufficient number of copies for the use of the members one week in advance of the formal presentation of their submission. The reason for this was to have the committee supplied ahead of time with any submissions which were going to be made in order that the members of the committee could read them beforehand. It was not our wish to stop people from presenting briefs but we felt they should not come to the meeting just to read a brief. We would prefer they send the briefs in ahead of time and then come to discuss and answer questions on the brief.

Mr. MITCHELL: How would they be advised of that fact?

The CHAIRMAN: Well, at such time as they were invited to attend on a certain day they would be advised in the letter that in trying to save the time of the committee they should forward their briefs ahead of time.

The seventh item states that the committee deal first with insecticides and pesticides. The committee recommended this because, as the minister mentioned, the royal commission on health will be making its report probably late this year and it was felt that we should await that report as it might save this committee a great deal of time and expense in going into the matters of cost and safety at the present time.

The eighth item is to the effect that the Minister of National Health and Welfare be invited to make a statement to the committee on Tuesday, October 8. Miss LaMarsh already has made her statement.

The ninth point is that officials of the departments of Agriculture, Fisheries, Forestry, Northern Affairs and National Health and Welfare, and of the food and drug directorate be called to appear before the committee. This was provided the committee agreed that we should deal with insecticides and pesticides first.

After we finish this I have a tentative schedule setting forth the appearances of officials of the departments and Ministers which I would like to put before the committee for their concurrence.

Item number ten states that the publications mentioned in a letter from Dr. Morrell, director of the food and drug directorate, to the chairman be supplied to the members of the committee if they so wish.

Dr. Morrell wrote me a letter giving a list of ten references of the food and drug directorate dealing with insecticides and pesticides. Actually, there are six references here, and I will read the titles: Principles Governing Consumer Safety in Relation to Pesticide Residues; New Developments and Problems in the Use of Pesticides; Safe Use of Pesticides in Food Production; The Control of Pesticide Residues in Foods under the Food and Drug Act; Use of Pesticides; Agricultural Chemicals. It was the feeling of the steering committee that these publications would be of great use to the committee itself and that they should be obtained for us. I do not think that the amount of money involved in the purchase of these is very great. Unfortunately, prices are not listed; however, most of them are from either the research council or the world health organization.

That, gentlemen, is a report of the steering committee.

May we have a motion that this report be adopted.

Mr. VALADE: Perhaps I came late, Mr. Chairman, and missed some of the points which were discussed. Was it agreed that the experts who were listed in last year's committee be called again or were they just cancelled out with the result that a new list will be made up.

The CHAIRMAN: I think that is something which the committee should decide. Certainly some of the people who were on the list last year should be called, in my opinion.

Mr. VALADE: My question was: Is the same list going to be used or do we have to make another list of the experts who will be called?

The CHAIRMAN: I think it is up to the committee to decide.

Mr. VALADE: I think the last committee really did a good job in setting up a list of experts and I think it would be a good thing if we included these experts in the list of witnesses to be called.

The CHAIRMAN: I agree. I think the work done last time by the committee and by its chairman particularly was excellent.

Mr. VALADE: On the same point, is it the committee's intention to bring back those experts who have reported to the committee or have attended as witnesses.

The CHAIRMAN: I think this would depend on the committee. For instance, in connection with the Brien report we had finished the examinations of Drs. Brien, Sellars and Dufresne. The report of their examination is available to the committee and will be available within a day or two. If it is the wish of anyone in this committee that these experts be called back that can be arranged.

Mr. ROXBURGH: In respect of the experts who were on the list last year, was everyone called?

The CHAIRMAN: No.

Mr. ROXBURGH: It may be there would be developments since last year, as a result of which you might wish to call someone else to attend before the committee. It is my opinion that you should not tie your hand to the experts of last year. We should approach this with an open mind. There may be some who did a good job and these we feel we may wish to have back; however, there may be others we may wish to call in and, in that connection, I think it should be left open for us to do that.

Mr. VALADE: Yes, I agree. I do not think my friend understood the point I was making, that we should start at least with these experts and not delete them from the list.

The CHAIRMAN: I think this is something which the sub-committee on agenda and procedure could deal with.

Members of this committee will be given the opportunity in the near future to make any suggestions they may wish to make as to the calling of witnesses.

May I have a motion at this time that the sub-committee's recommendations be approved.

Mr. MARCOUX: I so move.

Mr. BALDWIN: I second the motion.

The CHAIRMAN: It has been moved by Mr. Marcoux and seconded by Mr. Baldwin. All those in agreement? All those against? I declare the motion carried.

Motion agreed to.

The steering committee assumed that the committee would agree that insecticides and pesticides would be dealt with first. On that basis we have gone ahead and laid down a tentative schedule for the committee to follow.

On October 10—that is, this Thursday—the Minister of Agriculture and his departmental officials will be in attendance here for examination by members of the committee.

On October 17, the Minister of the Department of Fisheries together with his officials will be in attendance.

On October 22, I am hoping that the Minister of the Department of Northern Affairs and National Resources together with his officials, will be able to attend. However, this date has not been confirmed as yet by the minister.

On October 24, we hope to have the Minister of the Department of Forestry together with his officials.

It was the feeling of the steering committee that the government departmental officials involved should be called first as witnesses and on that feeling I have gone ahead and made these arrangements.

Now, because of several commitments elsewhere one week from today, October 15, is left open, and it was my hope that Dr. Morrell of the food and drug directorate would appear before the committee at that time, bringing with him whatever people he wished so that we might discuss that department and the regulations pertaining only to insecticides and pesticides. I think at that time Dr. Morrell possibly would like to make a general statement first and then carry on with more specific points in connection with insecticides and pesticides, if that is your wish.

Dr. MORRELL: Thank you.

The CHAIRMAN: Gentlemen, that is the tentative schedule which has been drawn up. Do you wish any discussion on the agenda we have drawn up to date? If not, this schedule would take us up to approximately October 24. It is a very tentative schedule, but it is my own personal feeling that after this is finished we should then move to groups and associations interested in agriculture, pesticides and insecticides, and then at a later date call witnesses of a more general nature, that is anyone who wishes to appear before the committee, say those people who have a university background.

If there is no further discussion on the agenda I think we have accomplished our work for this morning and are ready for a motion to adjourn.

Mr. ENNS: I move that we adjourn, Mr. Chairman.

Mr. RYNARD: I second the motion.



HOUSE OF COMMONS

First Session—Twenty-sixth Parliament

1963

SPECIAL COMMITTEE

ON

FOOD AND DRUGS

Chairman: Mr. HARRY HARLEY

MINUTES OF PROCEEDINGS AND EVIDENCE

No. 3

THURSDAY, OCTOBER 10, 1963

STATEMENT BY THE HONOURABLE HARRY HAYS,
MINISTER OF AGRICULTURE

WITNESSES:

Dr. Robert Glen, Assistant Deputy Minister in charge of scientific work, Research Branch; Dr. H. Hurtig, Associate Director (Pesticides), Branch Executive, Research Branch; Mr. W. C. Cameron, Director-General of the Production and Marketing Branch; Mr. C. H. Jefferson, Chief, Fertilizer and Pesticide Section, Plant Products Division, Production and Marketing Branch; and Mr. W. S. McLeod, Supervisor, Pesticide Unit, Plant Products Division, Production and Marketing Branch, all of the Department of Agriculture.

ROGER DUHAMEL, F.R.S.C.
QUEEN'S PRINTER AND CONTROLLER OF STATIONERY
OTTAWA, 1963

SPECIAL COMMITTEE ON FOOD AND DRUGS

Chairman: Mr. Harry Harley

Vice-Chairman: Mr. Rodger Mitchell

and Messrs.

Armstrong	Fairweather	Orlikow
Asselin (<i>Richmond-</i>	Francis	Pennell
<i>Wolfe</i>)	Gauthier	Roxburgh
Baldwin	Harley	Rynard
Basford	Howe (<i>Hamilton South</i>)	Valade
Cashin	Macaluso	Whelan
Casselman (Mrs.)	Marcoux	Willoughby—24
Côté (<i>Longueuil</i>)	Mitchell	
Enns	Nesbitt	

(Quorum 13)

Gabrielle Savard,
Clerk of the Committee.

MINUTES OF PROCEEDINGS

THURSDAY, October 10, 1963.
(3)

The Special Committee on Food and Drugs met at 9:45 a.m. this day. The Chairman, Mr. Harry Harley, presided.

Members present: Messrs. Asselin (*Richmond-Wolfe*), Baldwin, Basford, Cashin, Côté (*Longueuil*), Enns, Fairweather, Francis, Harley, Mitchell, Marcoux, Nesbitt, Orlikow, Roxburgh, Rynard, Whelan, Willoughby—(17).

In attendance: The Honourable Harry Hays, Minister of Agriculture. *From the Department of Agriculture, Research Branch:* Dr. Robert Glen, Assistant Deputy Minister in charge of scientific work; Dr. H. Hurtig, Associate Director (Pesticides), Branch Executive; *Production and Marketing Branch:* Mr. W. C. Cameron, Director-General; Mr. C. H. Jefferson, Chief, Fertilizer and Pesticide Section, Plant Products Division; Mr. W. S. McLeod, Supervisor, Pesticide Unit, Plant Products Division.

A quorum being present, the Chairman opened the meeting. He welcomed the Minister and invited him to address the Committee.

Mr. Hays read a prepared statement and answered a few questions. He was assisted by Dr. Glen.

The Minister having to leave for a Cabinet meeting, Dr. Glen, Dr. Hurtig, Messrs. Cameron, Jefferson and McLeod were questioned more particularly about the testing, use, control and safety of pesticides.

On motion of Mr. Basford, seconded by Dr. Rynard,

Resolved,—That the document referred to by the Minister of Agriculture, "REFERENCE PAPER ON PESTICIDES" be printed as an appendix to this day's proceedings. (*See Appendix*).

It was agreed that the officials of the Department of Agriculture in attendance today be available at the next meeting, together with the officials of the Food and Drug Directorate to answer further questions and supply a brief résumé of what the provinces have done with regard to distribution and sale of pesticides.

At 11.55 a.m. the Committee adjourned to Tuesday, October 15, at 9.30 a.m.

Gabrielle Savard,
Clerk of the Committee.

EVIDENCE

THURSDAY, October 10, 1963.

The CHAIRMAN: Now that the committee has reached a quorum, I shall call the meeting to order. The first thing on the agenda this morning, as we mentioned last time, is a statement by the Minister of Agriculture, the Hon. Harry Hays. I now call upon Mr. Hays.

Hon. HARRY HAYS (*Minister of Agriculture*): Thank you very much, Mr. Chairman. I am pleased to be here and to be part of this effort. I have a statement which I shall read, following which if there are any general questions you would like to ask, I should be very pleased to answer them if I can. I shall have to leave you shortly because we are having a cabinet meeting. But Dr. Glen and two of his associates are here and are prepared to enter into a general discussion and to answer questions.

The Pesticide Problem

Pest control is an important aspect of agricultural production in Canada. Many methods of control are used including cultural practices, resistant crop varieties, parasites, and chemicals. Frequently, however, the use of chemicals is the only practical method. The amount and variety of pesticides used has increased as our agriculture has become more specialized and as consumer demand for high quality products has grown. This trend is likely to continue.

It is quite obvious, Mr. Chairman, that the Department of Agriculture is definitely interested in the subject under study by your committee. Perhaps it would be fair to say that of all departments of government, those of agriculture and forestry feel the greatest need to use pesticides in support of the industries they serve. Nevertheless, the expanding use of such compounds also concerns the departments responsible for public health, fisheries, wildlife, and national defence. Consequently, representatives of six departments have been meeting periodically in recent months and have jointly prepared a reference paper on pesticides which describes their respective interests and responsibilities. We have copies of the paper for your use should you wish to have them.

The "pesticide problem" arises from the fact that many chemicals used as pesticides are hazardous to humans. Their use must be regulated. In this regard, the Department of Agriculture has two main responsibilities: (1) Under the authority of the Experimental Farm Stations Act (1886), to undertake research on pest problems with a view to devising practical control measures; and (2) to administer the Pest Control Products Act (1939).

The responsibilities for research on crop protection are assumed by our research branch. The program is quite diversified. The total effort is of the order of \$6,000,000 annually and may be roughly subdivided as follows:

	\$ Per cent (thousands)	
Basic and background research, surveys and services		
of which we spend, of the \$6,000,000	55	3,300
Chemical control	20	1,200
Resistant crops	13	800
Biological control	10	600
Cultural control	2	100
	<hr/> 100	<hr/> 6,000

In this context, chemical control includes insecticides, fungicides, and herbicides. Biological control relates mainly to the control of insects by use of their natural enemies: predators, parasites, and disease organisms. Cultural control includes tillage methods, crop rotations, and dates of planting and harvesting. The use of resistant crops may be illustrated by our well known successes in the control of wheat stem rust through the breeding of rust-resistant varieties of wheat.

If you examine these percentages you will see well over one-half of the total of \$6,000,000 is spent on new crops and that sort of thing in order to eliminate the use of some of the more dangerous insecticides.

In the crop protection program, we should perhaps note that more than half of the total effort is devoted to studies of the pests themselves and factors affecting their abundance and distribution. This has been done that we might better understand their ways and means of living and thereby gain some insight into the most likely methods of controlling their abundance. You might also note that we have been giving greater attention in total to the non-chemical methods of control than to the purely chemical approaches. As a result of this policy, Canadian farmers are now using means other than pesticides to control a number of important pests. For example, the wheat-stem sawfly is kept in check by the use of resistant varieties of wheat developed specifically for this purpose; and infestations of the pale western cutworm are prevented by proper timing of tillage in fields being summerfallowed. Furthermore, marked reduction in the amount of pesticides used in orchards has been achieved through the development of improved types of sprayers and by learning how best to use parasites and other natural agents in combination with chemical control. But in spite of these developments, the use of pesticides continues to play an important part in our crop protection program.

The research program on chemical control has two main objectives. The first is to devise practical methods that can be used by the provincial departments of agriculture in their pest control campaigns. The necessary link with the agricultural extension services is achieved through our research officers being members of the provincial advisory committees that each year review pest control recommendations in the light of new experience and new research information. The second objective is to provide technical advice and information to those who administer the Pest Control Products Act.

The Pest Control Products Act is administered by the plant products division of the production and marketing branch of the department. By this authority a pesticide cannot be offered for sale in Canada until registered under the act. The two prime considerations for registration are effectiveness of the product for the purposes claimed, and safety when used as prescribed. On questions of effectiveness and safety, the plant products division seeks appropriate advice. For example, on matters of public safety, the Department of National Health and Welfare is consulted; on probable effects on wildlife, the Department of Northern Affairs and National Resources.

Steps have been taken by the Department of Agriculture to improve the exchange of information between all the research, regulatory, and extension agencies involved. A pesticides technical information office has been established in the research branch to collect and distribute information promptly to all interested parties; and a national committee on pesticide use in agriculture has been formed with representatives from all the scientific and administrative fields that might contribute to the improved use of pesticides. The national weed committee has been studying the use of herbicides in Canada for more than a decade.

We are convinced that the use of pesticides must be continued if the best interests of Canada are to be served. However, the risk involved must be

clearly recognized and primary consideration given to safeguarding the health of humans against harmful pesticide residues in food. Continuing research and vigilance will be required but the final responsibility for the proper use of pesticides rests with the user who must read the labels and follow the directions if his own best interests are to be served.

Mr. Chairman, I have purposely kept my remarks brief. No doubt there are other aspects of the subject in which your committee will be interested. We will be very pleased to reply to any questions that you have. For this purpose, I am accompanied by Dr. Robert Glen, assistant deputy minister, who is in charge of the scientific work of the department, Dr. H. Hurtig, who is a specialist in pesticide use, and Mr. C. H. Jefferson, who is responsible for the registration of pesticides under the Pest Control Products Act.

When I visited in Europe last summer, I had along with me Dr. Barry and Mr. Williams who is an assistant deputy. We were able to speak with six ministers of agriculture, and we went over such matters with them. We had their assurance that in so far as insecticides and all the things we are discussing are concerned, we would have their complete co-operation in respect of an exchange of information and that sort of thing. This has been going on in the past and there will be no let up. They are still prepared to take a look at the work we are doing and we are free to take a look at all the work they are doing.

Mr. Chairman, this is the statement I was going to make. If there are any further questions I can answer, I will be glad to do so. Failing this I have Dr. Glen with me who is very familiar with the subject we are discussing this morning.

Mr. NESBITT: Mr. Chairman, when we have the minister and the various officials of the Department of Agriculture before us, may questions be directed not only to pesticides, but also to herbicides and types of agricultural fertilizers, and various drugs that are injected into animals to produce certain effects; would that be within the range of the questions we might ask when the officials are here?

The CHAIRMAN: I think if the committee so wishes, that would be a reasonable thing to do. It would seem unreasonable to restrict our questioning to a small field, and then have to have the officials back later on.

Mr. MITCHELL: Along the lines of the question asked by Mr. Nesbitt, would that include a question involving the use of antibiotics in feed supplements, and so on, in the agricultural field.

Mr. NESBITT: That is what I had in mind.

Mr. HAYS: I think we might explore this. I do not know why you should not take a look at these things. They are related.

The CHAIRMAN: The terms of reference include insecticides, pesticides and other noxious materials. It would be my feeling that any questions which the committee might like to ask along this line would be in order.

Mr. RYNARD: I would like to ask a question concerning the dairy industry. As the minister knows very well, there have been cows and cattle which have been poisoned by the use of sprays. The point I am bringing up is this: Can this spray be concentrated enough that although it might not kill the animal, it could go over into the milk? Have the dairy products been tested for this?

Mr. HAYS: It would be very difficult for me to answer this. I do not know whether there is an answer, but probably Dr. Glen could shed some light on the subject. I do not know what the assimilation would be, or whether it would be harmful.

Dr. ROBERT GLEN (*Assistant Deputy Minister, Department of Agriculture*): The points you mention are considered at the time when we are registering

chemicals. We require from the industry, when they make application to register a chemical, evidence that the chemical is effective in the way they say it is. We also require evidence with regard to its harmful effects. When this type of information is received by our office, we ask the Department of National Health and Welfare to comment on whether or not they feel the evidence of safeness is adequate. The question of whether or not this material would go through the skin of an animal into the products, I think, is a very broad one, and one could not say offhand how frequently this is so. I think it would be so with some things, and not at all with others. However, this is the kind of testimony you would expect the industry to furnish in support of their registrations. In other words, if a chemical is to be applied to an animal, then certainly we have to know whether it will go through into the product.

Mr. RYNARD: What I am trying to bring out is the fact that it did go through; a claim has been made, and it has either been paid or is still before the courts. The point I am getting at is: Is this going on in a harmful enough way and what tests have you that indicate whether it will go over into the milk or milk product? This is unlikely to kill a dairy cow, but I am wondering what tests are made to determine whether or not it is getting into the milk, the butter, or something else.

Mr. GLEN: In respect of the chemical which has been applied to the animal, you can run a chemical analysis on the butter or the milk to determine how much is in it. It is for the food and drug people to determine whether or not it is dangerous.

Mr. RYNARD: This was done by the municipality according to the instructions they had; but it did kill those cattle. The point I am getting at is that this must be operating in a dozen different places where they are getting enough that it is not killing the animal, but it may be going into the milk, and this may be dangerous.

Mr. ROXBURGH: Who is testing the milk? I believe there has been work done on this. I believe the portion that is getting through is small, and that it could go on for years and years before there would be any complaint.

Mr. RYNARD: I do not know that they are sure about that.

I do not want to belabour the point but from some tests they have made in the United States we find we are carrying six, seven, eight, nine or ten times the amount of substance they are carrying in Europe and I am wondering where the danger point is with this and whether we have any reliable tests that will indicate whether or not we are doing any harm, or are we checking this.

Mr. GLEN: I think your question, Dr. Rynard, really relates to the administration of the Food and Drug Act and the Department of National Health and Welfare.

Mr. RYNARD: Do you mean that it does not come within this particular subject?

Mr. GLEN: The Department of National Health and Welfare are responsible—

Mr. RYNARD: For the sprays?

Mr. GLEN: No, for the safety of the food the public consumes.

Mr. RYNARD: Have you a set-up in your department now which works with the people who sell these sprays or with the municipalities who use them.

Mr. GLEN: The Department of National Health and Welfare makes inspections of food products.

Mr. RYNARD: You would prefer then that I withhold my questions until a later time.

Mr. GLEN: I think that it would be proper to place your question at another time, but I do know they inspect the products.

Mr. RYNARD: I understand there were no tests made in the case to which I am referring.

Mr. GLEN: Were you alluding to the case of malathion poisoning of bulls.

Mr. RYNARD: No, I am referring to the case on the Nottawasaga river where they were spraying plants along the river.

Mr. GLEN: Well, if they are spraying to kill plants it does not sound like spraying animals.

Mr. RYNARD: No, they were not, but the animals ate the grass where the trees were along the river. You see, they were in a pasture field on the river.

Mr. GLEN: I do not know of this case. This is a different thing to treating farmers' stock, you see.

Mr. RYNARD: I suppose it is a municipal affair.

Mr. GLEN: It concerns the misuse of the pesticide. If it is poisonous to animals, animals should not be allowed to run on the treated range. This is what we have to find out. We do not like to use such materials on pasture fields.

Mr. RYNARD: Naturally there would be a great deal of blow. I believe you do realize that on occasion there has been threatened law suits. This may have been a case where the wind carried the spray over, but I do not know all the details of the particular case.

Mr. GLEN: Obviously this is not an agricultural use of pesticides to which you are alluding.

Mr. RYNARD: No.

The CHAIRMAN: Have you a question, Mr. Nesbitt.

Mr. NESBITT: Yes, Mr. Chairman. As you know, various substances are used commercially as pesticides or fungicides or included in fertilizers in some cases. As I understand it, you have said the manufacturer of these products must present evidence to the Department of Agriculture that these various products will do certain things. Also, evidence must be produced that they are not harmful in certain respects. Does the Department of Agriculture have any method of checking on these claims?

Mr. GLEN: Yes. We require the data that they have obtained in support of their statements and we submit these data to reputable people; if they feel the data are adequate, then they are accepted. In other words, there are some things that can be done, let us say, in the United States that we would say would be suitable for Canadian conditions but, on the other hand, there might be other evidence which we would not accept because we would say it is not applicable under Canadian conditions. Specialists in this field will evaluate these data against the claims from the company and if they are satisfied we accept their views, if not then the registration is refused until further evidence is obtained.

Mr. NESBITT: Who are these experts? Are they from other government departments or from outside agencies?

Mr. GLEN: In the case of agriculture, where they submit data that a chemical will kill certain kinds of insects and so on, these data are submitted to the research branch of the Department of agriculture, which is doing this kind of work. Our people are well qualified to judge the validity of the claims. But, where it is a case which refers to human toxicity or the toxicity to experimental animals which are used in determining the toxicity to humans; these data would be submitted to the Department of National Health and Welfare.

Mr. NESBITT: And then you receive a report from them in that connection.

Mr. GLEN: Yes.

Mr. NESBITT: There would be, I suppose, a greater examination of these matters if some new chemical substance was being introduced by a company other than one which naturally the department was familiar with.

Mr. GLEN: Yes. In other words, the same ingredients may be present in a large number of compounds and over a period of time you gain a great deal of experience with them. In that case, it is simpler to judge than in the case of something fairly new. Nevertheless, the evidence must be scientifically looked into. If it is a new chemical, say if it is "X", we want to see that they have tested "X" in the way we would test any similar chemical. If the evidence showed it gave no harm when adequately tested, that would be acceptable.

Mr. NESBITT: If you had a new substance, which we will call "X", introduced as a herbicide and there were certain claims made, in view of the fact that any herbicide may, of course, be absorbed by cattle or even in the spraying of garden vegetables by humans, are these substances analyzed and experiments carried out by the Department of Agriculture or some other government department to check these claims.

Mr. GLEN: It is not always necessary to check them if we know the names of the people and institutions who conducted the original tests. In other words, we must receive the information we require in order to assess the validity of the claims. For instance, if they show data from a reputable institution conducted by reputable people, we accept those data. I think it is true to say that we do accept that information. However, if the data are not forthcoming then we would not register the product. In some cases we conduct some tests ourselves to get further information.

Speaking of the Department of Agriculture specifically, we carry out a research program in respect of crop protection all the time and, as the minister pointed out, on a wide front, not just in regard to pesticides.

Mr. NESBITT: I am referring to herbicides and new kinds of fertilizers and that type of thing.

Mr. GLEN: We carry out a program of study in respect of herbicides as well, but the point is that we have a limited staff and we want to use that staff to the best possible advantage in the interests of agricultural industry.

If a chemical industry wishes to register a new herbicide we will receive from them all the information that they have. If we feel the information is not adequate after it is examined by qualified people, we will ask our research people if they wish to test this new compound. They must make that decision; otherwise they would get snowed under with overwork. We limit our testing program to that extent.

A good deal of the time we carry out new tests on new material submitted by industry. We do have a very co-operative arrangement with industry in this regard.

Mr. NESBITT: Mr. Chairman, I should like to ask one or two more questions and then I will allow somebody else to continue.

The first question I should like to ask is: Are tests made by the Department of Agriculture or some other department of government in respect of new chemical substances, such as herbicides, insecticides or perhaps substances used in fertilizers, like synthetic urea? Specifically, do you have evidence submitted by outside research departments that these herbicides or insecticides sprayed on plants have effects which are either unknown or known to be poisonous and harmful to humans? Does the Department of Agriculture assure itself that these substances are either destroyed by natural process of exposure

to oxygen and light or are not? For instance a herbicide or insecticide might not be absorbed through a leaf of a plant but during the fall or winter season it may go into the ground and be absorbed into the roots of the plant. I realize that this is a complex problem and that perhaps I am not expressing myself clearly, but does the department require information in this regard before registration?

Mr. GLEN: I think I can assure you that the department examines every application very critically. We must use a certain amount of judgment as to whether or not registration of a substance should be allowed, but I think that I can say definitely that we are very careful in this regard.

You asked a question in regard to known substances. Certainly if a substance is known there is no question about it having to meet all the requirements necessary. If the substance is not well known, we would likewise have to have evidence that if used as prescribed it would not be harmful. We cannot go much further than that, it seems to me, without stopping progress entirely.

Mr. NESBITT: I agree with that statement, Dr. Glen.

First of all evidence is submitted as to the effect of a new substance on every form of animal life, and I use that in the broad sense, as well as evidence in respect of the effect on humans, or does the department require evidence in that regard?

Mr. GLEN: We request the Department of Northern Affairs and National Resources to give us all the advice and information with respect to wild life that they are able to provide.

Mr. NESBITT: Does that include information in respect of insects and birds?

Mr. GLEN: I am referring mostly to mammals and birds in this regard. In respect of insects, we would handle that largely in our own department since we are active in the field of entomology. I would say that we would not necessarily have information on all the kinds of insects that a chemical would kill.

Mr. NESBITT: Are there regulations in existence as to content and dangers as noted on the package label in respect of chemical compounds used in insecticides and fertilizers?

Mr. GLEN: Yes. I think I am correct in saying that that is correct, and I would ask the gentlemen sitting at the far table to correct me if I am wrong. I believe these facts are on the labels.

Mr. NESBITT: The reason I asked that question is that on the packet of one commercial compound, which is a fertilizer and contains quantities of artificial or synthetic urea there is a warning at the bottom in very fine print that users of the substance should not place it on any edible plants for at least two weeks before they are eaten. I am quite sure that probably 90 per cent of the people would never see that, so that you would have to make sure that warnings such as this are made very plain on the package.

Mr. GLEN: Your point is very well taken in that warnings are not of very much use unless they are clearly stated and easily seen.

Mr. NESBITT: The public expects it on substances that are dangerous.

Mr. GLEN: There is another side to this question, that if you cry wolf too often or put a skull and crossbones sign on everything that might be poisonous, you lose the force of your warning when you really want them to watch out. This is one of the complicating features in the issue you have raised. However, I agree in general, and here I am expressing a personal opinion, that I do not think a warning is much use if you have to put your glasses on to read it.

Mr. ORLIKOW: I would like to ask several questions: first of all, I am just wondering whether it is fair to the public to depend to such a large extent as we seem to do on the research being done by the chemical industry and on the chemical industry doing the testing as to the dangers. After all, it is a tremendously competitive industry. There are real gains to be made in being first on the market, in making sales, and so on, and yet we depend on them to supply us with the information. It seems to me that we ought to have a real look at whether the government research programs are as extensive as they should be. This is not a criticism of the department. After all, this is a policy decision that has to be made by the government and by parliament. However, there have been so many reports in recent years about the ill effects—and I am not suggesting we ought to stop using chemicals—that we should do something about it. Lastly, is close cooperation between the departments required? Within the last couple of months I am pretty sure I saw a report in the *New York Times* where on the west coast of the United States they had spread a large forest area with a chemical to protect the trees. The trees were probably protected but one of the results was that some time later they found a couple of million dead salmon in the stream. Because this happened in the United States perhaps we can look at it more objectively than if it were in Canada, but did that company make any tests? If they did, did they know what would be the effect on the fish? If they reported it, for example, to the department in charge of forests, did that department report it to the department in charge of fish which makes an assessment as to the value we gain by using it as compared with the danger in not using it?

Mr. GLEN: You have certainly raised very big issues. To speak to the last one first, who makes the valuation as to whether you should spray or not, that may be a very difficult one to make. However, in Canada I might say, and speaking specifically of the forests in relation to fisheries, this is now done on a joint basis. Fisheries, forestry and wildlife people consult with each other before large scale programs are undertaken.

Perhaps I should not develop this subject since it is outside agriculture, but you raised it in this context and I think that we have been doing this for long enough to have established it as a policy, I might say, ahead of most other countries. I feel we are on very sound ground in this regard. In fact it is backed up by research both by the forestry group and the fisheries group using chemicals to see how little can be put on to kill the insect and what effect it would have on the fish. One must keep in mind that pesticides are designed to kill pests; they are not designed for use by fishermen. When they do kill fish, it is because of what you might call a side effect. This we have learned, and now I am sure there is a great deal more attention given to chemicals that will be used, let us say, on a watershed because it is from the great area of the watershed that they finally get into streams in sufficient amounts to affect fish. However, chemicals that are planned for this use would have to be examined from the standpoint of toxicity to whatever organism might be involved.

Mr. ORLIKOW: What about the question as to whether your department is in cooperation with other departments? Are you having a look in the light of the really serious charges, which have certainly not been entirely refuted, by people like Rachel Carson that the ill effects are very serious? I would not like to use the language she used, but are the effects serious and is there any effort made by the departments to have a fresh look at whether we need to do a great deal more of this ourselves rather than depend on industry?

Mr. GLEN: Yes, we are certainly examining the situation. I think, as the minister mentioned in his statement, we have had periodic meetings during the past year with representatives of the six departments that are con-

cerned with this matter in any shape or form, and this gives an opportunity to relate the experience of one group against that of another, and so on.

With regard to industry, all that goes into the development of a pesticide and the testing of it is a very costly business. We feel that industry must play a very large role in this, because if they did not the government would be swamped. It is very simple to say "Well, here are more pesticides; you go ahead and test them." It would be an extremely costly business to set up a testing scheme that did not involve industry in a major way, and we think it is reasonable to expect people who are manufacturing something for sale to provide the kind of information that we require both in regard to effectiveness and to safety. If we did not do that, I think we would be really in quite a quandary.

Mr. NESBITT: I do not question that, but do we learn from the experience? I was going to say mistakes but maybe that is the wrong word. I would not accuse an industry of deliberately ignoring danger, but do we learn from experience? Take this case which I postulated: after something like this happens, do we devise new methods of tests and new controls?

Mr. GLEN: Yes, there is no question about our learning and taking these matters seriously.

Again, since it is the question of forestry which you have raised, the experience of Canada was such—and we do not have to go to the United States for experience of injury to salmon—that it focused attention on whether or not it was necessary to use the chemical at the rate at which it was being used. As a result of that experience the rate is now about one-quarter of what it originally was. When you come to save a resource you have to match the expected gain against the risk involved to another resource, and this may be a very big and difficult question. However, we do not make a decision on that scale without considering the other risks involved.

Mr. FAIRWEATHER: I want to go back to Dr. Rynard's question. Highway departments and municipalities, as he has explained, and public utilities, are in my opinion most unfortunately spraying rights of way and other things throughout the countryside; and I am thinking of the aesthetic affects now; maybe I am worried about the side affects too. I wonder what public authority, provincial or federal, clears or okays, if I may use that word, the particular spray they use. I can think of my own province where the telephone company have been spraying hundreds of miles of right of way, and also the power commission and so on.

There is widespread worry in New Brunswick that the effect of this makes, for instance, woodcock and other small birds toxic. Who clears it? Where do you go? If I am in the city of Saint John where do I go to learn whether or not this chemical is all right?

Mr. GLEN: Any pesticide that is being sold in Canada has to be registered for sale under the Pest Control Products Act. This would apply to your sprays for herbicidal use on rights of way and so on.

Have you anything to say, Mr. Jefferson, in regard to this question?

Mr. JEFFERSON: I would only like to emphasize, Mr. Chairman, that all of these aspects are meat for consideration under the Pest Control Products Act before registration is granted. On the legal responsibility relative to public utilities, most of them are I think outside of federal jurisdiction and come possibly under provincial jurisdiction. They are in that sense laws unto themselves as to what they use.

As Dr. Glen has pointed out, products that are substantially available to them are only those which have been registered under the Pest Control Products Act. If they are used in the manner in which they are represented to be used

then, in the light of present knowledge, that use is not expected to result in any significant damage to public health or to wildlife.

Of course, if cover is removed by a chemical, the effect may be no different than if it was removed by cything or chopping, by cutting. It is just another way of achieving the same end.

Mr. FAIRWEATHER: I am not worried about the cover. I am worried about whether the woodcock are toxic. There is a great feeling in the province of New Brunswick that because of the use of these sprays, for instance, woodcock are now toxic. I want to know, before these people start out where do they get clearance, or do they wait for a result?

Mr. JEFFERSON: As far as herbicides are concerned, to the best of my knowledge these are not chemicals that are going to create a residue problem in wildlife or be toxic *per se*; and it is herbicides, I understand, that would be used. As I understand the situation in New Brunswick it is a chlorinated hydrocarbon insecticide that is implicated possibly in residues in woodcock and not a material that would be applied by municipalities interested in controlling vegetation.

Mr. ORLIKOW: What was the use of that drug which you just mentioned?

Mr. JEFFERSON: It was an insecticide used in the southern United States in an attempt to control fire ants.

The CHAIRMAN: Gentlemen, the reporter is having some difficulty hearing you. I would suggest that perhaps Dr. Hurtig and Mr. Jefferson could come forward to the front table. I think this would be better for all concerned.

Dr. Orlikow, you were in the process of asking Mr. Jefferson a question. Would you continue, please?

Mr. ORLIKOW: I think the explanation was given, Mr. Chairman. You found that the difficulty in New Brunswick, as far as you know, was not caused by any preparation used in New Brunswick but probably was caused by preparations which were used in the southern states to which certain birds migrated?

Mr. JEFFERSON: Yes. Relative to Mr. Fairweather's question with regard to the materials used by municipalities in road side clearing activities, that is true. I do not believe that the particular insecticide, heptachlor, is used to any great extent in New Brunswick. There may be limited use of it in agriculture areas.

Mr. ORLIKOW: I should like to ask one further question in respect of what you have just said. If we find in an area in Canada some undesirable effect resulting from the use of a material in the United States are we in a position to exchange this information with the United States in an attempt to get co-operation and solve the problem?

Mr. JEFFERSON: Yes. There is no impediment, that I am aware of, to the exchange of information between the two countries in respect of pesticides.

Mr. ORLIKOW: Is there more than a simple exchange of information? Is there any machinery in existence which can be used in an attempt to have the people in the United States find something else to control whatever they are controlling?

Mr. JEFFERSON: I believe such a system of information exchange has already been accomplished. I am getting out of my field here. My concern is primarily relative to the registration of pesticides. Perhaps Dr. Hurtig could answer this question.

Dr. H. HURTIG (*Department of Agriculture*): I am sorry, I did not catch the gist of the question.

Mr. ORLIKOW: I asked whether, when it was found there were some bad effects in Canada to humans, fish or wild life as the result of the use of chemicals for different reasons in the United States, we have the machinery to first of all transmit that information to the proper officials in the United States and, secondly, to see that they find something else to use, and vice versa?

Dr. HURTIG: You have in mind specifically, I imagine, this woodcock matter? This is a matter you should take up with the wildlife people when they appear before you in this committee. We did have something to do with this situation.

Just to review what Mr. Jefferson said in this regard, the compound involved, which is heptachlor, was used in several of the southern United States in the Gulf of Mexico area for the control of the fire ant. This is the winter area range of the woodcock. This compound heptachlor was accumulated by the earthworms and insects which are the prime food of the woodcock in this area. They consume large amounts of this, but not enough to kill them. Then they migrate back to Canada to their summer range and lay their eggs in Canada. The eggs laid in Canada and the tissue of the birds which grow from the eggs have been found to contain residues of heptachlor.

When this study was first commenced in respect of Canadian birds, you may have read in the newspapers the claim that this was the result of a Canadian farming operation. That is the birds were being contaminated by the use of heptachlor in New Brunswick. We realized right away that this was impossible because, due to our apprehension in respect of the use of this particular compound, about three years before we removed the recommendation for its use in order to make sure something would not happen that would interfere with the exportation of a root crop to the United States. Consequently we would not recommend the use of heptachlor in any area where this crop was being grown, and this included New Brunswick.

Just to reassure ourselves in respect of this point, we got in touch with the people who recommended the use of that specific chemical in New Brunswick. This involved provincial government individuals. They assured us that only five farmers in New Brunswick had used heptachlor, so it was impossible to account in that way for this compound being in the birds.

This confirmed again that the source of contamination of these birds was not in that area. Since this was not only our problem but also a problem in the United States, the United States users switched over to another compound entirely, but not just because of the woodcock matter as this was a very minor matter to them.

Our wildlife people have also found in respect of that switch over that the eggs of the migratory birds still contain residues which must be picked up by the birds at their winter ranges.

This whole situation is covered under the International Migratory Birds Convention and the wildlife people I believe have this under discussion with their United States counterparts. I would suggest that you ask them about this situation when they appear before you.

Mr. WHELAN: Mr. Chairman, I should like to ask Dr. Glen whether he can indicate the Canadian area using the greater amount of herbicides and insecticides?

Mr. GLEN: I do not know that I can answer that question, but I would say that a great number of pesticides, relatively speaking, are used in regard to orchard control, so that where you have fruit and vegetable growing you are likely to find a greater volume of pesticides being used than in areas where straight cereal growing takes place.

The answer to your question would also depend on whether or not there was a large outbreak of grasshoppers on the prairies with a resultant increase

in the use of pesticides in that particular year. There might be much less used the following year, so that you can understand the amount fluctuates a good deal.

Mr. WHELAN: I should like to ask another question in respect of vegetables. Do you test vegetables for traces of pesticides and herbicides?

Mr. GLEN: We only do this sort of thing as part of our research program. In other words, if we are doing some testing to find out what a chemical will do, we might test for residues in vegetables. Let us say that someone was growing potatoes in certain soil and we wanted to know if the potato contained a certain chemical; either we would perform that test for that purpose or have it done by the chemical company with which we were co-operating. We do not have a public service for testing, if that is what you are asking. Any testing that is done on products at the market level, as I mentioned earlier, is done by the food and drug directorate through their own inspection services.

Mr. WHELAN: We very often import vegetables and fruit from countries which are not as well developed as Canada, and I refer to Cuba and central America. Does the Department of Agriculture or any other department in government to your knowledge check to find out what sprays are being used in the growing areas, and are they examined for residual contents?

Mr. GLEN: Once again, this would fall within an area handled by the food and drug directorate and not by the Department of Agriculture. You are referring to imported food items which would be inspected by the food and drug inspection services and not by the Department of Agriculture officials in that sense. We do have knowledge of what is going on agriculturally, and we are available as consultants to the inspectors in this regard.

Mr. WHELAN: Do you feel that we have adequate testing facilities in order that we can experiment with plants to ascertain their residual content of sprays and insecticides?

Mr. GLEN: We are at the present time enlarging our analytical facilities in respect of our research program. This is one of the areas in which we feel we have to be more attentive. I might say once again this is a very complicated and difficult field.

Let me explain: when a company puts out a pesticide, we expect them to be able to give us a method by which it can be detected because if they are giving us information that it is safe, let us say, they must have a method of detection. However, the difficulty arises in that it depends on what plants it is being used because the same method might not work on another plant, or at least not work as effectively because of the wax or other substances on the plants.

Mr. WHELAN: So, as I understand it, the plant is being tested to see whether it is absorbing the chemical or whether it is being used up by the natural oxygen going into the plant.

Mr. GLEN: You can treat a crop at a certain date and then you can make repeated tests at intervals to see how long it took the chemical to disappear.

Mr. WHELAN: Can you say whether you have adequate leaf testing equipment distributed around Canada?

Mr. GLEN: I would say we are hard pressed on that side. We have not got very much in the way of those services, even for research.

Mr. WHELAN: There is another thing that Dr. Rynard was speaking about. I am speaking now of spraying. I come from an area that has a lot of natural drains and I remember that there were complaints that if you try to kill brush or cat tails or marsh grass with a certain chemical—I forget the name of the spray—it has a very toxic effect on marine life, on fish. They would spray the

stream when it was dry and the stuff would get into the leaves. Do the federal people control this, or is this strictly provincial?

Mr. GLEN: It is provincial. I might mention that this is a matter of use which is briefly referred to in the minister's statement. Our function as a federal department is to do research and to discover methods. The provincial departments then pick those methods up in their control campaigns. So that the problems of pest control campaigns are essentially a provincial matter.

Mr. WHELAN: I am getting back to the importation of food for consumption. Who takes care of that?

Mr. GLEN: Mr. Cameron, would you care to say a word on what your relationship is to the inspection of foods in this sense? This is a food and drug matter is it not?

Mr. W. C. CAMERON (*Director General, Production and Marketing Branch, Department of Agriculture*): Yes, when it comes to the manner of examination from the standpoint of quality, in so far as standards concern composition or size and colour and texture, these are grade standards and they are the ones which the Department of Agriculture deals with. Matters of health are referred to and handled by the Department of National Health and Welfare.

Mr. WHELAN: What I am getting at is the use of pesticides in other countries and the fact that this can be carried in fruit and vegetables. Other countries might not have the same regulations on use of pesticides as we have and they might be using all kinds of sprays that we are not allowed to use in Canada. When these fruits and vegetables are inspected as they come into Canada, do we know what sprays were used on them?

Mr. GLEN: That would be a matter for the Department of National Health and Welfare.

Mr. WHELAN: I have one other question. We have got into the subject of wildlife here and the toxic effect left by D.D.T. in national parks and so on. There is a national park in my constituency and this year they made a spot check. They had one employee sit out and when so many mosquitoes landed on him, that is when they decided they would spray for the control of mosquitoes. At a certain time this year it got terrible in the park. Someone created the fear as to the side effects of D.D.T. I certainly heard a lot of complaints about mosquitoes practically carrying campers away.

Mr. NESBITT: It sounds like Texas.

Mr. HURTIG: You talk about safety in using D.D.T. on humans and wildlife. This matter of mosquito control in Canada is one on which we did a great deal of pioneer research because I would say that our ability to use the north in many cases depends on our ability to live with insects. There is a very substantial program of work not only on mosquitoes but on black fly and horse fly control being carried out, and safety has always been a very important aspect of this. Now we have been able to work out a method of control for mosquitoes by air and ground which involve very small quantities of D.D.T. The dosages used now are in the order of a tenth of a pound per acre, which is quite small. The wildlife people have agreed that this is within the range where harmful effects to wildlife would be minimum. There is always consultation between the people who are carrying on this mosquito control work, especially in the armed forces establishments in Canada, and the wildlife people. Now, the parks branch is in the same department of government in which wildlife people are located, so that there is good consultation between them and the parks people all the time on any potential hazard to wildlife. I am sure liaison there is very good.

These mosquito control practices have been carried out in Canada for, I would say, over 15 years now, especially in the armed forces establishments in the north. They have been continuously asking the wildlife specialists in the area to go back to these areas to make observations and to see whether they can report on any harmful effects. As yet the department concerned has not been able to indicate any harmful effects. There are odd occasions when a bad accident occurs by mistake caused by weather or human error or something else, where fish are killed. You hear of this. However, you do not hear of the millions of acres that have been treated over several years in which there have been no accidents.

Mr. WHELAN: I have one other question to ask of Dr. Glen. In Essex county we use a tremendous amount of sprays, and with all the publicity that has been given, people have been alarmed that farmers are misusing these pesticides in the grain fields or orchards, on peas and sweet corn. People have been saying that farmers are just dumping it into the sprayers, putting in a little bit more so as to kill more pests, and thinking this will do a better job. They seem to be creating an impression that as long as they get a good crop they do not care what happens to humans. I think most people are careful as to what they are doing and most of them follow instructions as much as they can. What is your feeling on this?

Mr. GLEN: I am only expressing an opinion on this matter, but I think we have had remarkably good results with our spray programs throughout the country. I think that for the great good that pesticides have done and the fact that we could not have matured our agriculture without them, we have been astonishingly successful in very little harm having been done. That is my own feeling.

Mr. RYNARD: Mr. Chairman, I would like to go along with Dr. Glen when he said the farmers and the people have done an excellent job. I am wondering whether the following case is not important enough to be looked at, the case of a fellow deciding that a certain roadway should be sprayed. This happens to be alongside a pasture, a field or a stream. What qualifications does that man have for spraying, what training does he have to judge that this spray is not going to be poisonous, for instance? Pretty well all of us know of cases where people have gone and sprayed a certain area, and then the wind has carried the spray far beyond the limits they expected, so that damage occurred. This, I suppose, would be provincial, but I am wondering what instruction and training are given and what safeguards are used to see that this man knows the job he is doing, and that he knows of the dangers contained in this job if he goes too far with the spraying, or is this strictly a provincial job or municipal job? If it is, what precautions does the federal government take as a whole to see that the proper recommendations are made and that those men are properly trained to do this job?

Mr. GLEN: As far as I know—and I could be corrected on this—I do not think there are any specific requirements for those people.

Mr. RYNARD: That is the point I was coming to. I am wondering if perhaps in this committee we should make certain recommendations that the people be properly instructed and that they be capable of doing this job, knowing when and how to do it, whether to do it in one season or another. I heard a couple of farmers talking the other day and one said he did the spraying when it was wet or misty because he got a much better job. The other agreed but said they used to be told to use it when it was dry. The point is, when is the dangerous time to do this?

That goes on to the point, if you are doing it in the wet season and it is getting washed into the creeks or rivulets, whether any tests have been made

to see what it is doing to the plant vegetation in the rivers; whether there have been any checks of them to see if there is a great deal more storage in those plants so that fish or anything that feed on them would have a level of toxicity that would be dangerous to mankind.

This is out of your field I admit, but I am wondering whether you or anybody has any records of people having been actually poisoned or having died in Canada as a result of these things.

Mr. GLEN: I will ask Dr. Hurtig to comment on the parts of your discussion that he feels he can deal with.

Mr. HURTIG: The questions you raised largely revolve around the question you raised earlier; that is, what is the regulation and supervision of use. Again, the federal government has no legal authority in this matter but we are very active in it in the next stage of the use of chemicals; that is, at the decision-making level, as to what chemicals will be used and how they should be used.

As I mentioned before, this is a provincial matter. Most uses of pesticide within a province result from the meetings of advisory committees on pest control within the province. The province takes the final responsibility for publishing the recommendation, and the extension work of getting it to the farmer for his use is also provincial. However, the advisory committees which are set up to advise them what the printed recommendations should be are made up of the researchers from the federal government who are working on regional problems and who have the closest contact with new information, their own extension services and, increasingly in the last few years, the kind of people we have been talking about here who should be consulted. They are asking wildlife men to sit on these committees, occupational health men and regional men from the federal food and drug directorate. This is how they balance off the recommendations as to the good and bad involved.

In some provinces they have gone further. In Ontario, the water resources commission have now had an act passed which makes it illegal for anyone to treat water with any chemical without having a permit from the water commission. The person who proposes to treat water for aquatic weed control or anything like that must lay down all the details of his proposed application. Then the Ontario Water Resources Commission will examine his proposed action and their experts will say whether or not this is going to result in an undesirable situation. They are not relying on the applicant to claim this; they tell him whether he can or cannot do it.

Mr. RYNARD: Right now as the law stands any man can spray on his own property and use a spray that is probably too strong, maybe through lack of knowledge or maybe because he does not understand all the material he is reading. He could actually poison his family or somebody else by the use of this spray. Should we not, as the committee here, make a recommendation that before a man is allowed to use a spray he must get some kind of permit to do so, and that he be checked sufficiently to see that he is qualified to do it.

Mr. HURTIG: I do not want to enter into debate with you on this point; it is a matter of individual liberties as to whether you are going to licence everybody to act in his own best interest on his own property.

Mr. RYNARD: We do it in sanitation in the province. The people who go around and pump out the sewage dumps and and so forth, I believe, have to have a licence, do they not?

Mr. HURTIG: I think we have to be very careful about this because there are opposing groups who have different views on the subject. For example, I do not want to single out one professional group and say something detri-

mental to them as opposed to another, but there are custom spray applicators who make a great deal of money and a very nice living out of this thing. I will not mention the province, but will merely say that in one area there is a great move to have every applicator licensed under the provincial act as a custom applicator. They want to make it a closed shop, in other words. I do not think our farmers would be very happy about this.

Mr. RYNARD: I would feel that in the field of sanitation and public health we have done it already.

Mr. HURTIG: Yes, it is a different matter.

Mr. RYNARD: And it was done for the common good. I am just suggesting it might be certainly thought over by this committee because, after all, this thing is getting to the point where I believe there have been a good many people sick. I do not know whether any have died or not, I am not so sure about that, but I do know it is reaching a point where, in the line of birds, for instance, more and more use is going to be made of insecticides.

Mr. HURTIG: I think it comes back to the same matter that you have raised in the public health field. It all depends on your view as to how much you have achieved by education and how much by regulation.

Mr. BALDWIN: Mr. Chairman, I understand from what has been said that the Department of Agriculture administers its Pest Control Products Act.

Mr. GLEN: Yes.

Mr. BALDWIN: I want to ask a question or two. Can you first tell us what effect it has, what needs to be done under it and what your control policy is.

Mr. GLEN: Mr. Jefferson is in charge of this work so I will ask him to answer your question.

Mr. JEFFERSON: The Pest Control Products Act empowers the minister of the Department of Agriculture to regulate pesticides, and it refers to pesticides as those that are used in controlling agricultural pests. It might be useful to explain what this term pesticide covers. It covers any product used, or represented as a means, for preventing, destroying, repelling, mitigating or controlling directly or indirectly any insects, fungus, bacterial organism, virus, weed, rodent or other plant or animal pest. It is all inclusive.

The authority given to the minister provides that he may require the registration of these pesticides before they may be sold in Canada. The conditions under which he may refuse registration lie in two principal areas. He may refuse registration if the substance is unsuitable or ineffective for the purpose for which it is represented, and he may refuse registration if it is detrimental to public health, vegetation or domestic animals when used as directed.

In the registration procedure, as Dr. Glen has indicated, the applicant whoever he may be is required to state his case and prove, in this case to the department, or satisfy the department that the product will be effective and will not create a harmful situation when it is used as directed. This assessment is made in the light of available knowledge, and a decision is made as to whether or not these regulations have been met.

In relation to the question in respect of the use as directed, this is covered by the labelling. In other words the label on the container of these products must be descriptive, setting out what the product is, what it is for, how it is to be used, the hazards that attend that use, the precautions to follow to avoid those hazards and, in the event of accident or poisoning, the best action to take to reduce the effect.

I think that pretty well summarizes the answer.

Mr. BALDWIN: Perhaps I read this too quickly, but it seems to be very similar to the Food and Drug Act. While you may not know the legal aspects of this problem, I suppose the regulation relies on the criminal code for its legality?

Mr. JEFFERSON: Yes.

Mr. BALDWIN: Having in mind the problems that arose in regard to some of the drugs which we dealt with under the Food and Drugs Act, I assume that these can only be used following registration? There must be registration followed by the use of these items, is that correct?

Mr. JEFFERSON: There is perhaps an explanation I should give you. I think this registration is a type which differs somewhat from the requirements under the Food and Drugs Act, in that this is a registration that expires at the end of a calendar year. In order for the product to be sold it must be re-registered at that time. This regulation provides a time limit in which to make a reassessment, putting the onus back on the seller to prove his case again if some problem area, for example, has arisen which was not foreseen.

Mr. BALDWIN: That is exactly the point I wanted to bring out. If harmful side effects develop, then the registration being only valid for a period of a year, whoever is handling the product must come back to the department and apply for re-registration. Therefore, if you are in doubt, the application of this regulation places you in the position of requesting the manufacturer to satisfy your doubts in respect of this product; is that right?

Mr. JEFFERSON: Yes. Even though a registration is good for a year the minister can cancel the registration if it is established that the act has been violated in any respect or if the product has been found to be unsuited for the purpose for which it was registered.

Now, in respect of use and safety, this is largely related to the representations made as to its proper use. Some pesticides are very toxic and have what you might call high potential hazards if misused. The same is true of many other things in our environment, but the mere fact that a product has a high toxic potential is not in itself grounds for refusing registration. If this product can be presented for use in a way in which the harmful potential will not be expressed then the product may be eligible for registration.

There may well be a situation where there are no practical directions supplied for the safe use of a product, in which case registration would not be granted.

Mr. BALDWIN: Has the legality of the act ever been tested as far as you know on constitutional grounds?

Mr. JEFFERSON: No.

Mr. BALDWIN: In other words you have a very flexible act with very wide powers granted under it? I refer to the question of pest control by the use of insecticides and other materials. This registration regulation gives you very wide powers; am I right?

Mr. JEFFERSON: It is our impression that as this has been administered that is the case.

Mr. BALDWIN: Thank you.

The CHAIRMAN: Gentlemen, I should like to bring to your attention the fact that we have now just a quorum. I hope no one else finds it necessary to leave.

Mr. ENNS: I certainly do not wish to prolong this discussion, but in respect of the control of one resource, the assessment and the risk involved to another resource; for example, spraying the forests and damaging the fish as mentioned by Dr. Glen, he stated that the dosage now being used in this regard has

been reduced to one quarter that which was used in earlier stages. It is my impression that if four times the present dosage was too much and would kill fish it can be properly assumed that the present dose will still leave some residue in the product, and I should like to be assured that the present dosage is a tolerable level.

Mr. GLEN: I think one would have to say that the amount of hazard or risk from the use of the present dosage is minimal. That does not mean it still would not perhaps kill fish under certain conditions. The point is, the individuals involved are satisfied that they can control the insect, perhaps not quite to the same degree as if the dosage were half as much as earlier used, or one half of a pound instead of one quarter of a pound, but with reasonable control and with minimal risk to the fish they have just about reached the best balance possible. This balance was arrived at by research and consultation. The point I wanted to make was that I did not wish to be on record as saying that this present dosage would not kill fish under any circumstances.

Mr. ENNS: There was some mention made in respect of the unknown dangers inherent to the fact that some individuals are not sufficiently trained in the use of these sprays. I should like to suggest that there is a built in control here in the form of law suits. I refer to that example of the dieldrin residual in cream in Manitoba at which time there were five persons prosecuted. Since that happened there has been effective control and I now feel assured that we do not have to go around killing people before we make an attempt to discover that some things are harmful.

Mr. HURTIG: Yes, I think your suggestion is a correct one and this type of prosecution has a salutary effect on other people.

Mr. ROXBURGH: Mr. Chairman, I should like to know if there is any possibility of a product being purchased on the open market in Canada today that can be or is dangerous, in respect of which there has not been a thorough testing.

Mr. JEFFERSON: There is a simple answer to this. It is very misleading.

Mr. ROXBURGH: We do not want any misleading answers. We want a straight answer.

Mr. JEFFERSON: It is inherent in things that safety cannot be proved beyond a doubt. Nature is just that way. So in that context everything including tobacco which you smoke and the pesticides you use on foods and so on—

Mr. ROXBURGH: That is most unfair!

Mr. JEFFERSON: Could be harmful. That is an appreciation of the purest approach.

Mr. ROXBURGH: In other words, there are two sides to the story. Is there a guard key under our present rules and regulations?

Mr. JEFFERSON: We take every possible and reasonable precaution we can, and we build on the experience of the past so that with each new pesticide that presents itself they have one or two new hurdles to go over in establishing safety. The efficacy is pretty well taken care of.

Mr. ROXBURGH: I will put the question in another way: what is your opinion on the efficiency of our present checking program in percentages? Is it 75 per cent efficient, or is it 100 per cent efficient?

Mr. JEFFERSON: I would say 99 per cent plus. I would not say 100 per cent because we do find, as time goes on, that new information has opened up a hazard area that was not recognized initially, and we move to cover that over. The criteria are in a continuous state of development.

Mr. ROXBURGH: A little while ago Dr. Glen stated that if all the work came to the government along the lines of which we spoke, not including wildlife but just taking agriculture, you people would be overwhelmed and that you would not be able to handle it. If that is the case, then how can your statement that it is 99 per cent efficient be correct if you cannot have enough people to handle it? How can you be sure? Can you qualify that answer?

Mr. JEFFERSON: I can justify it by the history of experience with registered pesticides. The number of actual hazards in being are, in my view, relatively small with pesticides as compared with other things in the environment, and it is on this basis that I took the figure of 99 per cent.

Mr. ROXBURGH: Are we lax as the government in not making sure there are plenty of facilities to make a double check on this? Remember I am an orchardist myself and have used hundreds of tons of it and although I am an old man I am in pretty good condition. Can anything be done to reassure the public and everyone else that every possible precaution is being taken? Do you not think there should be more laboratories or whatever else you feel is necessary? You cannot handle it all now and you are depending on the manufacturer—who is doing a wonderful job I think, there is no doubt about it—but we also have the problem mentioned by Mr. Whelan of importing foods and many other things from other countries. Is there a double check on all that?

Mr. JEFFERSON: As far as the imports are concerned, as Dr. Glen has said this is in the area of food and drugs.

Mr. ROXBURGH: I have one more question. I think it was brought out and I think most of us realize that damage is done mostly through carelessness and through lack of knowledge. I do not know whether there were any deaths caused. I believe there was one death caused through straight carelessness on the grower's part.

As to the spraying of all these side roads, we know there is a lot of misuse there and lack of ability. Actually, a lot of spraying is bad use of funds as well because it is generally done when it is of no value to the weeds. However, that is getting off the subject.

My question is whether our laws are now strict enough. If they are, they are not being enforced because I think myself, and I may be wrong in this, if sprays are properly handled there is little danger the failure may occur when the spray goes into the ground and is transmitted further along, as happened in a certain area of my county where they found arsenic in the wells—those were shallow wells of course. Are these laws strict enough, and if they are not should this committee not only work on the line you are working on but also make suggestions as to the enforcement of laws? What do you think of those laws?

Mr. JEFFERSON: The use, as has been indicated, falls outside of the federal area of jurisdiction, as I understand it.

Mr. ROXBURGH: It is in the area of provincial jurisdiction. There could be a recommendation, if this committee sees fit to do it, that provincial governments take a more serious view of this, or look into it more thoroughly, to partially help control, because there is a lot of waste as you realize.

Mr. GLEN: There is one point on which I might comment. As we move forward with more knowledge, we certainly know more than we did previously, and as new things come to light, we shift emphasis or give attention to new areas. As a result, if you look back over time, we gradually have been giving more attention to the pesticide problem as we moved along, and I think that so far we feel that our judgment has been reasonably good and that we have

kept up pretty well. Now, there is a certain risk in these things. If you are going to use new knowledge as it becomes available, it does not matter what form it takes there are certain risks that occur because we do not know everything about it. All we can do is use it with judgment and care. We could be doing all we feel is necessary on a certain subject, but five years from now we probably will be doing more. This is to be expected because we will have more knowledge on which to base our actions. We just have to keep alert. It is a matter of keeping vigilant in regard to the use of pesticides.

Mr. ROXBURGH: Do not get me wrong on this because I am interested in this and have done considerable work, reading and studying on this subject. I think you, gentlemen, have done wonderful work and are certainly doing everything possible. In fact I know that you are. The only thing I was wondering about was that after all there are only twenty-four hours in a day and you have to sleep some time. The thought that I had at the back of my mind was whether there could be a further extension. For research on tobacco, we only have one measly experimental farm which has been kept back rather than allowed to go ahead. It could do a terrific job with more qualified men, more chemists and more men with degrees as well as practical men. For example, Rhodesia has gone very far ahead. The same thing can apply here. This question might put you on the spot, but at the same time it is what we are here for, to see if we can improve the situation. I know you people are doing a wonderful job.

Mr. MARCOUX: I do not want to prolong this meeting since I have another one at 11 o'clock. I have a short question to ask Dr. Glen. You have spoken about the department relying in a very generous way on the chemical companies. Are there any inspections regularly made to those plants to see the effectiveness of the companies?

Mr. GLEN: Not that I know of.

Mr. NESBITT: I have asked a number of questions this morning concerning regulations affecting the exercise of pesticides, herbicides and the like. Of course, as I understand it, Mr. Chairman, the constitution presents rather a problem in this regard because certain fields of legislation lie particularly within the provinces and certain ones lie within the federal government.

There are three questions I would like to ask in this respect. First of all, is it correct to say that the only responsibility the federal Department of Agriculture has is that of the registration and licensing of herbicides, pesticides et cetera.

Mr. GLEN: We also include the responsibility for research on methods of using pesticides.

Mr. NESBITT: Yes, but actually as far as the public are concerned, the direct effect on the public is registration?

Mr. GLEN: I would ask Mr. Jefferson to comment. There are other acts which impinge on this.

Mr. JEFFERSON: I believe earlier you mentioned fertilizers. There is a Fertilizers Act also administered by the plant products division and a Feeding Stuffs Act administered by the same division.

Mr. NESBITT: The same thing is done? They are just registered and licensed?

Mr. JEFFERSON: The regulation of products for sale is done through a registration procedure of products, and the same general provisions are applied to all three types of commodity with respect to efficacy and labelling.

Mr. NESBITT: And they cannot be sold without?

Mr. JEFFERSON: They must be in conformity with these laws before they may be sold.

Mr. NESBITT: Secondly, can legal authority by the provinces ban the use or limit the sale of herbicides or pesticides?

Mr. GLEN: Yes, they can pass legislation on their own.

Mr. NESBITT: Has it been done?

Mr. GLEN: Yes, in Manitoba.

Mr. NESBITT: Can a municipal authority take action to limit the use of pesticides or herbicides? I suppose that would follow from the provincial legislation.

Mr. GLEN: I think they could, but I am expressing an opinion only. They take similar action in other things. It would be under the provincial law that the municipality could so act.

Mr. NESBITT: Is there any control on the advertizing of these products? We are all familiar with certain advertisements, and I think "Raid" would come to mind immediately. Is there any federal control over the advertizing of alleged benefits and this type of often somewhat exaggerated advertizing?

Mr. JEFFERSON: There is in the context that such advertizing could be a part of or is a part of labelling, but it is a very difficult area with which to grapple. From the legal standpoint, very often these advertisements do not say anything in point of law though they may imply.

Mr. NESBITT: Rather by implication than suggestion?

Mr. JEFFERSON: Yes, but we do work on the worst of these, those that are brought to our attention, and we try to bring them in line with the facts as we understand them.

Mr. NESBITT: To use Mr. Roxburgh's approach, to what extent do you think your efforts in this regard are effective—ten per cent, twenty per cent, thirty per cent? How much?

Mr. ASSELIN (*Richmond-Wolfe*): Or ninety-nine per cent?

Mr. JEFFERSON: To the extent that we go into it, I do not think it would be ninety-nine per cent but we will say ninety per cent.

Mr. ROXBURGH: In your opinion would it be advisable to have perhaps greater authority in this field?

Mr. JEFFERSON: No.

Mr. NESBITT: I have one or two other brief questions. Is there a cumulative effect of insecticides and herbicides? When these get into areas where they remain in the ground and are not carried away by water or some other means, or in the case where these substances and compounds are collected as a result of drainage processes, is there a dangerous cumulative effect caused by the accumulation of some of these herbicides and pesticides?

Mr. GLEN: I suppose there is a certain danger of that in some circumstances.

Mr. HURTIG: You have to qualify an answer to this by saying that it depends on the specific compounds you are dealing with.

Mr. NESBITT: Dieldrin.

Mr. HURTIG: Dieldrin, yes. It is an extremely persistent compound and one that can remain for very long periods of time in soil. It can be picked up in forage crops, eaten by animals and stored in body fat. It can go into water and so on if the conditions are right. This is one of the compounds for which the recommendations for its use are very carefully reviewed in the light of new knowledge.

Mr. NESBITT: Is this not a substance used quite extensively in commercial insecticides and pesticides.

Mr. HURTIG: It is used quite extensively in western Canada for grass-hopper control, and in the past four years very substantial steps have been taken to make sure it is being used as intelligently as possible—and this through close liaison with provincial governments involved. These provinces have been encouraged to subsidize other compounds. This is one way of doing it. First of all it is done by education; and secondly they have subsidized alternative compounds which have no residue hazards associated with them. Farmers are being told frequently that dieldrin must not be used on forage crops, that it may be used only on cereal crops and then only to a certain stage of growth. When they buy dieldrin in Manitoba, Alberta and Saskatchewan they have to sign a declaration as to where it can be used and where it must be used.

Mr. NESBITT: A provincial declaration?

Mr. HURTIG: Yes, in front of a witness.

Mr. NESBITT: Is it not true that there are many household compounds which people use around the house and garden that contain dieldrin to a considerable extent, products which are sold in cities and towns throughout eastern Canada particularly.

Mr. HURTIG: There are some, but in this matter of household use and garden use, you cannot legislate against stupidity.

Mr. NESBITT: I am just asking the question as to what may perhaps be done about it.

Mr. HURTIG: The range of compounds for sale for home and garden use have to be registered first of all, but what a manufacturer will or will not package is up to him and it is in his own best interest that the product does not get a bad name.

Mr. NESBITT: A very large number, in fact nearly all of these household compounds or compounds sold for house and garden use, contain not only dieldrin but other compounds equally destructive.

Mr. HURTIG: Yes, nicotine sulphate is equally destructive. You may have in mind the man who opened a bottle with his teeth.

Mr. JEFFERSON: There are many products in a household that, in terms of statistics, do far more damage than the pesticide group.

Mr. NESBITT: Does the federal Department of Agriculture have any specific regulations and has any method been introduced to warn people as to the effects, if any, of compounds produced to make animals grow larger or to tenderize meat and the like?

Mr. JEFFERSON: Those that would be used in feeds are dealt with under the Feeds Act. Those that are sold directly as chemicals or tenderizers would be dealt with largely under the Food and Drugs Act by the food and drug directorate, or through the Department of National Health and Welfare.

Mr. NESBITT: Are there any known harmful results from eating meats of animals which have been fed these compounds, and I do not refer to harmful effects to individuals suffering from specific allergies?

Mr. JEFFERSON: In so far as misuse of those compounds is concerned, there may well be, but I am not aware of any in relation to their use in the prescribed manner. There may be effects due to overdoses, although I am not aware of this situation.

Mr. NESBITT: Is it correct to say that certain insects develop immunities to certain of these insecticides after repeated doses, with the consequent result that the dosage used is increased and becomes perhaps harmful? Is it

correct to say that in the event of an immunity developing and the dosage being increased from time to time, the hazard increases also?

Mr. GLEN: There is a phenomenon of resistance to pesticides, yes. This has been known in respect of a number of species of insects. Usually a grower will find that he is not getting the control he once had and switches to some other material.

Mr. NESBITT: For example, if you found that mosquitoes became resistant to the application of D.D.T. or some of these other compounds which are relatively harmless to human beings as they are used, but may be harmful to other forms of animals if the use of the compound is increased from one third of a pound per acre to two thirds of a pound per acre, would the danger increase with the general increase of usage?

Mr. GLEN: I think there is no doubt that the more chemical you use the more likely you will have a dangerous result.

Mr. NESBITT: Mr. Chairman, I should like to state that perhaps the members of this committee could visit one of the laboratories as well as other government facilities, or perhaps a commercial plant such as Canadian Industries Limited in Montreal. I do not suggest that we travel a great distance but I do suggest that the steering committee consider this suggestion.

The CHAIRMAN: It is now 11.30. Is it the wish of this committee to continue for some time? I have three or four names on my list of individuals who wish to ask questions. Is it the wish of the committee to continue now or to adjourn to this afternoon, providing these gentlemen are available, or perhaps adjourn until some other occasion?

Mr. COTE: I should like to ask one or two further questions.

The CHAIRMAN: I was wondering if we should proceed and finish this portion of our task now.

Mr. RYNARD: Let us carry on until perhaps a quarter to twelve.

Mr. COTE: I should like to ask one or two questions. The department does have meat inspectors at all the abattoirs throughout the country?

Mr. GLEN: Yes, that is correct.

Mr. COTE: Do these inspectors check only the method of killing the animals or do they check the meat itself for dangerous residual effects?

Mr. GLEN: I would ask Mr. Cameron to answer that question. This subject again is not within our field.

Mr. COTE: These inspectors are members of the department of agriculture, are they not?

Mr. GLEN: Yes, but these inspectors grade the meat for quality. What role do you play in regard to this question, Mr. Cameron?

Mr. CAMERON: Regarding this matter of meat inspectors, as far as testing of the animals for disease is concerned, this lies within the jurisdiction of the health of animals branch. As to whether there are residues from chemicals of any kind in the meat that again would fall in the same category as foods under the Food and Drugs Act.

Mr. COTE: How would officials be made aware of the fact that some of this meat was affected by chemicals?

Mr. GLEN: Periodic inspections are made at different plants by the food and drug people looking for various kinds of contamination. This is an inspection within their jurisdiction.

Mr. COTE: Then there is machinery in existence in this regard?

Mr. GLEN: I understand that there is, but this is not done by the Department of Agriculture.

Mr. BASFORD: Mr. Chairman, I wonder whether we could be supplied with the reference presented by the minister?

The CHAIRMAN: A part of the committee is not present but I was going to take the opportunity of asking whether it would be helpful to have this reference provided to the members of this committee.

Mr. BASFORD: Would it be included as an exhibit to the evidence of this committee?

The CHAIRMAN: I think we should perhaps have this made as an appendix to the Minutes of the Proceedings.

Mr. BASFORD: Could I have some idea of the volume of pesticides with which we are dealing? What is the volume of pesticides that have been used over the last two or three years?

Mr. GLEN: Mr. Jefferson could perhaps give you some information in that regard.

Mr. JEFFERSON: The answer to your question expressed in dollars at the wholesale level is in the neighbourhood of \$35 to \$36 millions worth annually. The answer expressed in pounds or gallons is a bit difficult because you are attempting to add something like apples and oranges. In terms of numbers of registrations of products it is in the order of 3,500 approximately. In terms of different active ingredients it would be in the neighbourhood of four hundred different specific chemicals.

The growth rate of use is in the neighbourhood of 10 per cent annually, and the growth rate in respect of registrations is of about a comparable magnitude.

Mr. RYNARD: Could you tell us approximately what proportion of the pesticides used in Canada are produced in Canada? I am afraid I am butting in here and I apologize for doing so.

Mr. JEFFERSON: Probably in the neighbourhood of 80 per cent are imported, mainly from the United States. There are very few basic pesticide manufacturers located in Canada.

Mr. COTE: Any pesticide imported I assume is subject to the same sort of regulations that apply to that which is manufactured domestically?

Mr. JEFFERSON: Pesticides manufactured outside of Canada can be imported by individuals for their own use. The act does not cover importations of pesticides that are not for resale.

Mr. COTE: I was wondering why the act says that the minister "may" require regulation rather than "shall" require regulation. I do not quite understand that situation.

Mr. JEFFERSON: I do not know whether I can answer that question.

Mr. GLEN: In actual fact the result is as it would be had the regulation said "shall".

Mr. COTE: But the minister does have the discretion in this regard?

Mr. JEFFERSON: The minister does have a discretion. There are some pesticides which are exempt from registration, and I refer to those which are imported for manufacturing purposes. In other words, they are eventually going to be registered before they reach the ultimate users. These pesticides are exempt from registration. A pesticide that is made up on a pharmacist's prescription is exempt from registration.

Mr. COTE: I take it then that anything being used as a pesticide in the agricultural field is registered in Canada?

Mr. JEFFERSON: That is not entirely correct because an individual farmer living close to the border between the United States and Canada can purchase United States dollars, cross into the United States, buy his pesticides and bring them back for his own use.

Custom spray operators do the same thing because they are providing a service, not a product.

Mr. COTE: Is there not a weakness in the act in this regard?

Mr. JEFFERSON: There is a recognized area here in which pesticides can come into the country, but which would not be eligible for registration, if an application were made for registration. In practice this does not represent nearly as great a loophole as appears, because the bulk of these come from the United States where the registration regulations are substantially the same as our own.

Mr. BASFORD: Is there any reason for that loophole?

Mr. JEFFERSON: I think that perhaps for administrative purposes (this act was passed in 1939) and we certainly have it in mind to recommend that this loophole be closed. It has been closed in the Feeds Act and the Fertilizers Act, which are quite recent.

Mr. GLEN: This is one of the areas that we have under consideration right now.

Mr. BASFORD: But can we take it that the committee discovered something? I was wondering whether it was possible to see some of the research evidence that is filed in support of these applications for registration?

Mr. JEFFERSON: It is confidential but I am sure that an example can be produced.

Mr. BASFORD: I have the same concern that Dr. Orlikow has with the fact that we seem to rely on the manufacturer when we want to be certain as to the safety of a certain product. I think we should satisfy ourselves as to the nature of that research.

Mr. JEFFERSON: There is an area here possibly. The onus is on the manufacturer to make his case. In the process of doing so I do not think there is a case of a manufacturer who relies entirely on his own information. He farms out various aspects of his problem to private research groups, to laboratories such as the one in Falls Church, Virginia, and to other similar groups as well as to universities. They rely very heavily on university graduate schools.

Mr. GLEN: The kind of data we accept comes from reputable places. I might say that our own people examine the evidence, and sometimes they are not satisfied with what is done in the universities or somewhere else. They may not feel that enough examples have been used in the tests and therefore they advise against it. This does not mean that because it is done by a good place it is not examined. We do so. But if we are satisfied with what we have and we think it is pretty good evidence, then we go ahead.

Mr. BASFORD: Mr. Chairman, how do we arrange that?

The CHAIRMAN: The steering committee can discuss it with the department officials, if you wish.

Mr. BASFORD: Have you ever cancelled registrations?

Mr. JEFFERSON: We have cancelled very few registrations. One that comes to my mind immediately is in the household area. It is called Mosquitolite. It is in the form of a candle that contains citronella. This was cancelled on the ground that it was shown not to be effective for the purpose subsequent to registration.

Mr. BASFORD: Have you cancelled any because of information that came to light that it is no longer safe?

Mr. JEFFERSON: No, I do not believe so.

Mr. W. S. MCLEOD (*Plant Products Division, Department of Agriculture*): Perhaps we should make a distinction here. Mr. Jefferson's example has been a case of cancellation of registration in toto. However, we should be aware that it is far more frequent that one claim out of a registration may be cancelled without the cancellation of the balance of the registration.

Mr. BASFORD: That means that the product is allowed but a certain use of it is cancelled.

Mr. JEFFERSON: Yes. This is normally dealt with in connection with re-registration. In other words, it is refused re-registration for that particular purpose.

Mr. BASFORD: Because of the safety involved.

Mr. JEFFERSON: Because of a safety problem either causing an occupational hazard or a residual situation that would create a violation under the Food and Drugs Act.

Mr. BASFORD: Would it indicate a weakness of research in a certain area?

Mr. JEFFERSON: Obviously it does in the light of new knowledge.

Mr. GLEN: Except there again one has to be reasonable because you can easily imagine the great variety of circumstances under which things might be used, and to make advance research on all of those circumstances would really not be supportable. For that reason there is always an outside chance that some peculiar set of circumstances would not be met. However, even if you set up your research, doubled and trebled it, you might still miss this peculiar set of circumstances.

Mr. BASFORD: I was wondering whether you are satisfied with what are called the police provisions of the act if you do cancel a registration or withdraw this from the market? Is this easily done?

Mr. JEFFERSON: Yes, we have in the neighbourhood of 80 inspectors throughout Canada, and it is feasible to police such a withdrawal or cancellation of a registration.

Mr. BASFORD: It seems to me this is an immense problem when you have pesticides selling in every corner grocery. How do you remove this product from the market in the event we had some calamity and the product turned out to be dangerous?

Mr. JEFFERSON: The way it has been done is through the persons who are responsible for its distribution or sale. A spot checking in those areas is made where the product can be expected to be found, and of course if a withdrawal does not take place then this individual is in violation of the law and a prosecution would be recommended.

Mr. BASFORD: There is no registration of retailers?

Mr. JEFFERSON: No, this is again a provincial matter, and in the case of Manitoba they have a new pesticide act which does provide for the registration of those handling certain pesticides.

Mr. BASFORD: I know that in my own province they are considering it. I was wondering if the following would not be possible. I know we have had a lot of discussion here and I do not want to prolong it but could we have a brief resume of what the provinces have done? We have heard of the Ontario act with regard to water and of the Manitoba act.

Mr. GLEN: It could be prepared for the committee.

Mr. BASFORD: The committee would find it very useful. We could then have something showing what the provinces have done.

The CHAIRMAN: It is ten to twelve. Is it the feeling of the committee that they would wish to have these gentlemen back? If you so wish and these gentlemen have the time we could, by a little juggling of our schedule, ask them to appear again on Tuesday so as to continue where we have left off. Perhaps they could prepare some of this material.

Mr. BASFORD: I have two more lines of questioning apart from what the provinces are doing which could be filed in the report. My other question is whether there are any regulations governing the safety of employees in the manufacturing process of these pesticides?

Mr. GLEN: That would be under occupational hazards, if there were any federal aspects of the question, but it could also come under provincial laws.

Mr. NESBITT: There is a suggestion that the gentlemen who are here today return on Tuesday, but in addition there is a great overlapping obviously of different questions from various members of the committee, questions concerning other government departments. I wonder whether officials of the Department of National Health and Welfare could not appear at the same time next Tuesday. It might expedite matters for everyone, for the various officials of the department and for ourselves.

The CHAIRMAN: This is an excellent suggestion and it works along with our schedule because next Tuesday the people from the Food and Drug Directorate dealing with insecticides and pesticides, such as Dr. Morrell and Dr. Patterson, are to appear. If it is the wish of the committee and if Dr. Glen and his staff could appear on that day it would suit this committee very well.

Mr. NESBITT: There is much overlapping in this. Perhaps we could have the Department of Northern Affairs and National Resources as well.

The CHAIRMAN: There is a motion by Mr. Basford seconded by Mr. Asselin that the document referred to by the Minister of Agriculture, the reference paper on pesticides, be printed as an appendix to this day's proceedings.

Mr. BASFORD: Can it be recorded on Tuesday that I have not finished with my questioning?

The CHAIRMAN: This will be done. The meeting is adjourned.

APPENDIX

REFERENCE PAPER ON PESTICIDES

The purpose of this paper is to describe the broad philosophies and responsibilities of those departments of the Government of Canada that are concerned with research, regulation, and use of pesticides. It is essentially a summary of the present status of the pesticide problem in Canada and serves as a general reference for this purpose.

The paper was prepared by an interdepartmental committee with representation from the federal departments of Agriculture, Fisheries, Forestry, National Defence, National Health and Welfare, and Northern Affairs and National Resources.

Ottawa

September 1963.

REFERENCE PAPER ON PESTICIDES

Introduction

Public attention has been aroused by questions about the ultimate effects of the increasing use of pesticides. Some writers have expressed concern about direct hazards to man and domestic animals from the application of pesticides, some have suggested dangers from the effects of pesticide residues in food. Others have deplored the hazard to fish and wildlife.

The use of insecticides, fungicides, rodenticides and herbicides may expose humans to these chemicals through contamination of food, air, water, soil, plants, animals and other parts of the working and living environment. All pesticides may be classed as poisons but, if exposure to them is properly limited and if they are used in accordance with instructions, they do not necessarily constitute a hazard to the health of humans or to other forms of life.

In Canada pesticides are not the only means of pest control. Others include sanitation, cultural practices, resistant varieties, and biological control agents such as parasites, predators and diseases of insects. The solution of each pest control problem in agriculture, forestry, fisheries, wildlife or public health depends upon detailed studies, and the measures recommended will be those best suited to the industry, climate and economics of the region concerned.

Uses

Pesticides are often indispensable. Without the aid of insecticides and fungicides it may not be possible to grow potatoes and tomatoes commercially, or to protect apples against diseases, insects and mites. Pesticides are used in grain bins, elevators, boxcars and ships to protect Canada's world-wide reputation for high-quality cereals that are free from insects, moulds and other contamination. As there are some 2500 kinds of insects and plant diseases that affect Canadian agricultural production, foods of the quality expected by the consumer today cannot be regularly produced, stored or delivered without the use of pesticides.

In Canadian forests and northern areas now under development, work and morale are seriously affected if adequate control of biting flies is not provided. Air bases, radar stations and mining sites are made more habitable for man in the subarctic summer through the use of insecticides. Canadian urban areas are now almost free of fly-borne dysentery because of improved sanitation and use of pesticides. The Fraser River and Winnipeg floods of the last decade provided other examples of the indispensable role of pesticides in solving public health problems. Encephalitis, which is transmitted by

mosquitoes in Canada, can be prevented by timely and controlled application of insecticides. In many of the tropical areas in which Canadian Armed Forces and technical assistance personnel are now serving, the transmission of malaria and yellow fever cannot be controlled without pesticides.

Outbreaks of forest insects and diseases have caused extensive timber mortality in Canada from earliest times. Timber losses that were tolerable in the early stages of industrial use of the forest cannot now be accepted, owing to the continually rising demands on forest production. Heavy capital investments in forest roads and other improvements, and in extraction and manufacturing plant and equipment, require continuity of wood production from the forests. Biological control, silvicultural techniques and management procedures are frequently quite incapable of forestalling serious losses due to pests. In such cases chemicals must be employed as a protective device.

Through the judicious use of pesticides, valuable stands of timber have been preserved for current and future use of the forest industry. An indirect benefit has been the avoidance of the extreme fire hazard that would ensue if trees were to be killed by pest attack simultaneously over millions of acres. Since forest protection is the first requirement for effective forest management, it may be said that availability of the chemical control method in case of need is an essential to sound and orderly forest management in regions beset with destructive pest species.

Hazards

In the human population there are three major areas of concern with regard to the use of pesticides. Persons involved in the manufacture, formulation, distribution and use of these chemicals are exposed to them generally under controllable conditions. The consumer may be exposed through ingestion of pesticides required in the production of food, but the pesticide residues in foods are held to safe limits by proper control measures. People are exposed to pesticides that are used widely in the household and in the home garden. Household pesticides may constitute the major hazard to health because the methods of using them in the home do not afford reliable control as to the amount dispersed; the safety with which they are used is dependent upon adequate labelling and instructions for use, and on strict adherence to instructions. The Department of Agriculture receives advice from the Department of National Health and Welfare with regard to toxicity and labelling instructions for safe handling of some of these chemicals. But there is some question whether the cautions and instructions for safe use are either adequately emphasized for the inexperienced user or followed as strictly as they should be. The very presence of poisonous chemicals in the home constitutes a hazard to children if pesticides are not properly stored.

Exposure to a pesticide may result in acute, subacute or chronic poisoning, depending on the chemical composition of the pesticide and the type and degree of exposure. Some pesticide residues in food could cause chronic poisoning if small amounts of residue were ingested daily over long periods of time. The results of this type of exposure would be difficult to determine. Chronic poisoning might also be due to occupational exposure or frequent use of pesticides in the home. But people who absorb these chemicals by breathing them as dusts or aerosols, and through the skin during spraying operations or from handling contaminated objects, may suffer subacute or acute poisoning as indicated by specific symptoms. Chronic poisoning may also occur but is not as easily detectable.

The use of pesticides over extensive forest areas depends largely on dispersal from aircraft, and is not without hazard to other forms of life inhabiting the

forest. Insecticides sprayed on forests may reach the forest streams and rivers. Even in low concentrations some of these pesticides may kill fish and fish food organisms.

For some years experiments have been carried out in eliminating undesirable fish species from sport fishing waters through the use of chemicals. The method is used with discretion since as yet it has been impossible to obtain complete elimination of coarse fish and at the same time avoid the destruction of desirable species and fish food organisms.

Safeguards in Selection and Use of Pesticides

Establishing safeguards in the selection of new compounds for use against pests is a complex procedure that starts years before a pesticide is put on the market. Data developed by the chemical industry are evaluated by several federal agencies concerned. They study the effects of swallowing large amounts, of taking very minute amounts over long periods of time, of absorption by the skin and of inhalation. These studies include effects arising from recommended use as well as from misuse. Effect on flavour, nutritional value, processing and keeping properties and other factors of probable significance are explored if need for such evaluations is indicated.

Study of these aspects of a pesticide calls for specialized knowledge, and much of the assessment work is done by experts in the departments of Agriculture, Forestry, National Health and Welfare (residues in food and occupational hazards), Northern Affairs and National Resources (wildlife), the Department of Fisheries and the Fisheries Research Board. These agencies conduct research on pesticides used in the production, preservation, and distribution of agricultural, forestry, fisheries and wildlife products, and in control of insects affecting the health and comfort of man and animals. They maintain close liaison with other government agencies, the chemical industry, and provincial extension authorities.

The Food and Drug Directorate of the Department of National Health and Welfare, under the authority of the Food and Drugs Act, establishes tolerances (legally permissible amounts of pesticide) that are considered as safe levels for pesticide residues in or on foods intended for human use. Acute poisoning from pesticides remaining in or on foods is not likely, but if instructions for use are not followed the residues may be sufficiently high that their ingestion over long periods of time could endanger health. In determining the pesticide residue that may be legally tolerated (allowed to remain) in foods, the primary consideration is that it must not be above the maximum amount accepted as safe for lifetime daily consumption by man. As a matter of fact the legal tolerance is usually below this amount because it is never set higher than needed in good agricultural practice.

Pesticides differ in their toxicity. A residue level that is considered low enough for one pesticide may be much too high for another. Different tolerances for pesticide residues in foods are therefore established to ensure that the intake of each pesticide by the general public will not exceed the amount considered acceptable on a toxicological basis. Tolerances have been established in Canada for approximately seventy pesticides on food crops. These apply to domestic as well as imported food. If no tolerance has been established no pesticide residues are permitted.

In order to establish a tolerance for a pesticide in a food, or in groups of foods, detailed information must be submitted to the Food and Drug Directorate. Information on the physico-chemical properties is necessary to ascertain the identity and specifications of the pesticide. Residue data must be provided on an adequate number of crops or foods representative of those on which the pesticide

may be used. The rate of decomposition of the pesticide under various conditions of storage and processing is required in order to estimate the residue at the earliest probable time of consumption of the food. It is the responsibility of the manufacturer to supply an analytical procedure satisfactory for enforcement purposes.

A long history of safe human use would be the most desirable criterion for evaluating the safety of a pesticide in food, but this is impractical. However, the effect of the compound on laboratory animals can be observed and the dosage-effect curve determined. From such data the potential risk from its presence in the human diet can be evaluated. The toxicological data required in evaluating a pesticide for the possible establishment of a tolerance in foods include acute, subacute and chronic toxicity. The acute toxicity of the pesticide must be studied in several species, to indicate the extent of species difference. Subacute toxicity is usually studied in rats and dogs over a period of two to three months.

The chronic toxicity of a pesticide is studied in at least two species of animals, usually in rats for their lifetime of about two years and in dogs for about one year. Observations are made on food consumption, food efficiency, growth, mortality and behavior. Blood and urine tests and organ function tests are performed during the study, and gross and microscopic pathological examinations of the various organs are carried out at the end of the feeding period. Reproductive studies should be carried out for at least two generations. If there is any possibility that the compound could produce cancer, no residue will be tolerated. Pesticides belonging to the organo-phosphorous class are tested for possible synergistic action with all other pesticides of this class being used, as the combined effect of two of these pesticides may be greater than the sum of their individual effects.

The absorption, distribution, elimination and possible accumulation of a pesticide, as well as its effects on certain enzymes are studied in laboratory animals. Metabolic transformation and the toxicity of the metabolites (break-down products in the body) are determined when necessary. In some cases it is essential to study the translocation and metabolism of the pesticide in treated plants, and the possible toxicity of the plant metabolites of the pesticide is determined in laboratory animals.

The permissible dietary intake for man is usually established on the basis of the data obtained in chronic toxicity studies in animals. The starting point chosen is the maximum dose level that causes no deleterious effect in the most sensitive species. This dose in animals, expressed in mg/kg (milligrams per kilogram) of body weight is divided by a large safety factor, usually 100. This factor is intended to provide for differences between test animals and man, individual sensitivity, unusual eating habits, and the possible synergistic effects in combination with other chemicals present in food. The value obtained after division by the safety factor in mg/kg is considered to be the "acceptable daily intake", i.e. the maximum daily dose of the chemical which appears to be without appreciable risk when taken by man throughout his entire lifetime. "The permissible level" in ppm (parts per million) of the fresh weight of the food can then be calculated from the acceptable daily intake, the proportion of the diet constituted by the groups of foods for which the particular tolerance is to be established, and the average weight of the consumer. The official tolerance, which is also expressed in ppm, is never greater than the permissible level and in most instances is considerably smaller.

A pesticide cannot be offered for sale in Canada before it is registered under the Pest Control Products Act administered by the Department of Agriculture. Registration is granted only if, after a thorough assessment, the product

has been found to be effective and safe to use. Much of the information on which this assessment is based is developed by commercial interests and confirmed and expanded through government and university research. Pesticides offered for sale must be labelled in a complete and accurate manner with claims, directions for use, warnings as to hazards, and precautions to be taken. The Act does not apply to importation of pesticides by individuals for private use.

Specialists in the Department of Agriculture usually study a new chemical for one to three years before the manufacturer attempts to obtain registration under the Pest Control Products Act or petitions to establish residue tolerances under the Food and Drugs Act. They act as consultants and advisors on the adequacy of the findings submitted by the manufacturer to the regulatory authorities, and on applicability to Canadian conditions. They determine how the pesticide can be used within the residue limits established and participate in the work of all the provincial or regional committees that annually review and revise recommendations to farmers for pest control.

Registrations expire at the end of each year and re-registration is conditional on a record of effective and safe use in relation to the label claims, directions and cautions. The Department of Agriculture maintains an inspection and enforcement program to ensure that only registered products are sold, that they are properly labelled, and that the packages contain the amount and quality of product claimed. Registration under the Pest Control Products Act is only a license to sell. It means that the Department has been satisfied that the claims on the label are valid if the recommendations on the same label are followed. It does not constitute a recommendation by the Department of Agriculture for use of that particular brand or product.

The Food and Drug Directorate maintains inspection and analytical services to enforce the tolerances which have been established. Inspection of foods indicates some instances of abuse of pesticides. In cases in which foods are found to contain excessive residues, prompt action removes them from the market.

The residues of pesticides remaining in foods depend on many factors. The amount applied, the number of applications, and the interval between last application and harvesting are important considerations. In Canada and a number of other countries where the conditions of use are specified the misuse of pesticides on food crops should be detected and effective action taken to prevent any hazard to health. However, enforcement procedures under the tolerance system require satisfactory analytical procedures and an adequate number of competent personnel.

Consumers should remember that not all crops are sprayed with a particular pesticide and that tolerances establish the maximum permissible residues whereas the residues found on a sprayed crop are generally less than the amount legally permissible. Furthermore, residues which are present may be reduced or removed entirely during cleaning and processing, or may be destroyed by cooking.

Occupational exposure, particularly in the manufacture and formulation of pesticides, is under close supervision of the manufacturer. People may work safely for an eight-hour day five days a week within established limits of exposure. Generally these limits are being lowered as better control measures become possible. People using these chemicals for agricultural purposes and in the home are not subject to close supervision; the manufacturer provides instructions for protecting users from hazardous exposure.

The Surgeon General of the Armed Forces requires that all pesticides used by military personnel be registered under the Pest Control Products Act and that certain pesticides be used only under the supervision of specially trained

personnel. Special pesticides may be obtained if less hazardous materials fail to achieve control, but only after careful consideration in each case and only with approval of the Surgeon General.

The Department of Forestry and agencies responsible for fish and wildlife are actively engaged in research directed to the reduction of pesticide hazards to fish, fish food organisms and wildlife. The danger from the aerial application of insecticides in forested areas is most acute in the aquatic environment and much attention has been given to this problem. The amounts used have not been demonstrated to be hazardous to game animals and have had only a minimal hazard to migratory birds. The effects of biological concentration of pesticides and of long-term exposure of wildlife to pesticides have been very inadequately studied in Canada. Wildlife, fisheries and health officials point out that there is no defined legal responsibility for the examination of the flesh of wild game and game fish for pesticide residues.

Preliminary surveys are undertaken by fisheries and wildlife agencies prior to the implementation of programs employing fish eradicators. Recently a selective larvicide, lethal to sea lamprey at certain concentrations yet harmless to humans, stock and game animals, has been used extensively in the Great Lakes tributary streams. But chemicals cannot be used for eradicating undesirable fish populations before the pesticide concentrations required are evaluated for effects on fish, humans and stock. For economy and safety the total volume of water requiring treatment is determined and no more than the required quantity of chemical is used. The program will not be implemented if it is considered that the introduction of a fish-killing chemical will endanger humans or other animals.

Current approaches

Agriculture

In Canada the value of non-chemical methods of pest control has been recognized, and some degree of success has been achieved in harmonizing them with chemical control to gain economy, effectiveness and safety. Canada's pioneer work on developing rust-resistant varieties of wheat is known around the world, but resistant varieties may not always provide complete protection against new strains of rust. For this reason an emergency approach to control of rust through the use of chemicals is under development. Similarly the wheat stem sawfly has been controlled in the prairies through intensive studies on the insect, its parasites and host plants. With a combination of resistant varieties and modified cultural practices this major threat to production has been reduced to a minor problem. However, as the insect has great adaptive capacity, the chemical basis of resistance in the plant is being studied in anticipation of future problems. If the naturally occurring chemicals that are unfavourable to the insect's nutrition can be identified they will be the basis for an alternative or more direct attack on the insect. Control through resistant varieties has been achieved by altering the structure or chemistry of the plant to render it unattractive, toxic or unpalatable to the insect. The introduction of synthetic chemicals that have the same effect is being explored.

Resistant varieties, modified cultural practices, parasites, and natural diseases have not provided adequate protection against the recurring grasshopper outbreaks on the prairies. For many years the principal weapons were tillage methods. Early in the century, highly toxic baits of sodium arsenite and bran were the only effective complementary measures. Baiting was dangerous to livestock and required stockpiling of huge quantities of raw materials that were difficult to mix and laborious to apply. When sprays of aldrin, dieldrin, heptachlor and similar compounds were introduced in 1950 they were enthusiastically accepted. But better analytical methods recently

showed that minute residues of the new chemicals persisted on forage plants and have contaminated the meat or milk from animals that fed on them. Newer pesticides have been discovered that do not leave objectionable residues and these in turn are taking their place in grasshopper control.

Naturally occurring insect hormones and diseases are being studied as possible agents of control. The bacterium *Bacillus thuringiensis*, for example, is effective against certain insects. The toxin produced by this organism is being investigated with the ultimate objective of synthesizing it chemically for commercial use.

Unusual success and economy in apple insect control have been achieved in Nova Scotia by well-timed applications of selected pesticides in smaller doses than normally used elsewhere. This has allowed many of the parasites and predators to survive as agents of control and has greatly reduced the cost per acre for pesticides. It has not been possible to duplicate completely in other areas the spectacular success and economy of the Nova Scotia program because of differences in the problems between regions. Pesticides with lower toxicity to man, animals, bees and other beneficial insects are constantly being introduced into regional recommendations as full information on their effectiveness, safety and economy of use is developed.

In British Columbia another and equally important approach is being studied—increased efficiency of spray application. New sprayers have been developed that give good results with substantially less pesticide per acre. The production of sterility in insects by use of radiation and chemicals is also being explored as a possible means of controlling the codling moth.

Control of insects by use of parasites, predators and disease organisms has been emphasized in Canada. Though these have been useful mainly in control of forest insects, intensive work is continuing in agricultural areas. Introduced parasites are controlling the European wheat stem sawfly in Ontario, but not the wheat stem sawfly in the prairies. Other species controlled by these means are apple mealybug, woolly apple aphid, European earwig and greenhouse whitefly. An introduced parasite of the oriental fruit moth is still an effective factor in control and survives in the presence of DDT spray schedules that must be applied to peach trees in Ontario to protect them against the moth and other pests.

Forestry

The forest community is relatively stable and does not react as swiftly and as dramatically to disturbance as does an agricultural crop. A tolerance to short-term injury by insects and diseases provides possibilities for the development of control by biological agents, silvicultural techniques, or management procedures, which pose no threat to other forms of life.

In cooperation with units of the Department of Agriculture and international agencies concerned with biological control the Department of Forestry has had notable success in establishing parasites of certain forest pests. The Department is also investigating pathogenic microorganisms as control agents for forest insects. The spectacular success of host-specific virus diseases in controlling important sawfly pests of jack-pine forests and Scots-pine Christmas-tree plantations are two outstanding examples that prove the worth of this approach to the problem.

Natural control, induced by one means or another, is the key to the ultimate balance of forest pests with the forest itself. Chemical control is a tool to be used when the hazard to the forest is acute and severe injury can be prevented by no other means. The objective of chemical control should not be eradication but reduction of damage to maintain the forest in health until the pest cycle passes or natural agents re-create the balance.

Research in chemical control of forest pests is limited to the use of chemicals already accepted as safe for agricultural purposes. The use of chemicals in the forest has been sporadic and variable in extent. It is unlikely that chemicals not used in agriculture could be developed for special forest use because of the cost of development and discontinuity of use. Laboratory research programs point the way for field experiments to determine the most efficacious formulations and minimum spray deposits. Field studies help determine the effects on pest and beneficial populations. Cooperation with other agencies concerned with the broader effects of pesticides on forested areas permits the development of formulations and spraying techniques least hazardous to forms of life other than pests.

Fisheries and Wildlife

In fisheries and wildlife the attitude toward chemical control of pests must be different than in agriculture and forestry. The Federal Fisheries Act and the Regulations under the Migratory Birds Convention Act forbid the placing of any deleterious substance in waters frequented by fish and migratory birds. This limitation is being made more widely known to all users of pesticides, particularly those in agriculture and forestry. The chemical to be used is tested and if toxic its use is discouraged and the users are requested to find substitute material less hazardous to fish and wildlife. If this substitution cannot be made programs are restricted, if possible, to areas away from waters frequented by fish and migratory birds, to seasons when fish and migratory birds are not present, or to the lowest dosages. This is a compromise which recognizes the right of each industry to develop, but never wholly at the expense of the other.

National Defence

The Department of National Defence considers that pesticides are both useful and necessary, particularly under modern conditions of worldwide rapid transit. The use of pesticides in the Armed Forces, however, must complement the control of pests by adequate sanitary standards and preventive maintenance.

Health

Research on the significance of pesticides in our food and environment is being carried on in the Department of National Health and Welfare. In the Food and Drug Directorate more specific and more sensitive methods for the detection of small amounts of these chemicals in foods are being developed. Also in this Directorate the interactions between combinations of some pesticides with each other and with certain drugs have been studied. In the Occupational Health Division research is being conducted on the toxicity of a few of these chemicals, and this may lead to the selection of pesticides less toxic to humans. Because of the complexity of these chemicals and the different types of exposure, many other aspects of the use of pesticides require investigation both in Canada and in other parts of the world.

Coordination and integration

Provincial or regional advisory committees on pest control are the link to the provincial agricultural extension services which in turn provide information direct to the farming public on how pesticides can be used effectively and safely. These committees include federal and university scientists and provincial pest control and extension specialists. Each year they review the status of information on pest control and revise their recommendations accordingly.

To relay information to the user is an ever-increasing problem. The use of pesticides has become a highly complex technology. Economy of use, residues, resistance, and reconciliation of chemical and biological control are of immediate concern to the grower. Several steps have recently been taken to promote liaison between the regulatory, research and extension agencies, and to ensure prompt communication of information to users of pesticides through the provincial advisory groups. In 1959 the Pesticide Technical Information Office was established in Ottawa by the Department of Agriculture. In 1961 the National Committee on Pesticide Use in Agriculture was established under the National Coordinating Committee on Agricultural Services. The pesticides committee has representatives from federal research and regulatory agencies, provincial governments, universities, and the agricultural chemicals industry. Its members are drawn from all the scientific and administrative fields that might contribute to the improved use of pesticides. The new group has already started to define areas requiring further research and to stimulate the necessary action.

The Canada Department of Agriculture, the National Dairy Council, and the Dairy Farmers of Canada have collaborated in taking special steps to inform milk producers on pesticides that may and may not be safely used in milk production. Other specialized production groups such as canners and processors are similarly informed of the need for detailed attention to the selection and use of pesticides, especially if agricultural by-products such as cannery wastes are to be used as animal feeds.

Circumstances require that the use of chemicals for forest pest control in Canada be based on a multilateral review of each individual problem of any magnitude. The circumstances peculiar to forest protection in this context include federal government responsibility for surveys and research on forest pests, and predominant provincial crown ownership of forest land. Furthermore, forest pest problems are frequently of huge dimensions, affecting the interests of more than one province as well as numerous industrial firms and private owners of forest lands. Since the objective of forest spraying is the preservation of trees for future use (not the protection of an annual crop) it is important to determine that control action is essential to continued life of the trees. Consequently each major pest control project is subject to continuing reviews by numerous industrial, provincial and federal officers, starting as much as eight to ten months before aerial spraying can be undertaken. This provides safeguards against the initiation of poorly conceived or unwarranted chemical control projects.

Because of the risk of injury to fish and wildlife introduced by spraying operations over the forest, each proposed forest pest control project of significant proportions is reviewed by the Interdepartmental Committee on Forest Spraying Operations. This committee is composed of representatives of federal departments concerned with forestry, fisheries and wildlife. Representatives of the Department of Agriculture, of provincial governments, and of industrial firms and associations are invited to attend meetings of the committee for review of specific problems. The reviews by the committee include: (a) extent and intensity of pest outbreaks, and specific locations where distribution of pesticides may introduce hazards to fish and wildlife populations; (b) precautions that should be taken to reduce such hazards; and (c) need for additional research on choice of insecticides, concentration and dosage rates, and techniques of application.

The special pest control requirements of the Armed Forces are met through both continuing consultative efforts and financial support for research. The Department of National Defence, through the Defence Research Board, supports research and testing programs to develop equipment and evaluate principles of pesticide use for pest control at military units. This work is carried out at

universities and by other government departments. Close liaison is maintained with all concerned through the Defence Research Board Advisory Committee on Entomological Research.

Some Canadian establishments of the Armed Forces require aerial applications of pesticides for biting fly control. In order to supervise the planning and execution of these programs the Surgeon General's office annually convenes the ad hoc Committee for Airspray to consider requests for aerial spraying of individual military units. The Departments of Agriculture and Fisheries and the Defence Research Board are represented on this committee. Unauthorized airsprays by either military or civilian aircraft at military installations are prohibited. A number of military units have been refused airspray protection because the hazard to fish and wildlife is considered unacceptable.

Canadian government experts are serving on the secretariats and expert committees of the World Health Organization and the Food and Agriculture Organization of the United Nations to achieve safe and effective use of pesticides in both public health and agriculture. Disagreement between countries on permissible levels of residues in food can impede the free movement of agricultural products between countries. An arbitrary restrictive decision by an importing country can also interfere with the effective use of the most economical pesticides by the producing country. These and other aspects of pesticide use are now the subject of formal international discussions that have great significance for Canada and other food-exporting countries. Canada has initiated action to clarify some of the potentially controversial aspects. A comprehensive resolution on a proposed program of work was introduced by Canada and adopted at the 11th Conference of the Food and Agriculture Organization of the United Nations in Rome in 1961. In November 1962 a conference of governments in Rome examined the program of work proposed by a committee of experts in an endeavour to reduce controversy in the most important aspects of pesticide use in agriculture.

Summary and conclusions

The use of pesticides must be continued if we are to maintain the enormous benefits already derived from them through increased supply of food and fibre and improvements in control of diseases of man. At the same time the risk involved must be clearly recognized and primary consideration given to safeguarding the health of humans against possible harm arising from pesticide residues in food. This admits no compromises. If errors are made, they must be on the side of safety.

The increasing use of pesticides in many segments of our economy will require continuing research and vigilance to ensure that they are used safely. Publicity and education are needed to reduce the hazards of the household use of pesticides. Legislation on the registration of pesticides for sale ensures that the purchaser is provided with complete instructions and cautions to be observed for effective safe use, but the final responsibility for proper use of pesticides rests with the user.

Chemical control of insects and of some plant diseases will continue to be a first line of defence to prevent losses during production, storage, processing and export of food and fibre. The integration of chemical and biological approaches to the control of insects, diseases, rodents and weeds is constantly in the minds of all research workers, and will continue to receive special attention. The demand for unblemished products of uniform size or quality, with good keeping properties, cannot be met without pesticides.

There is no provision for the routine evaluation of the effects of pesticides used in agriculture or forestry for their real or potential damage to wildlife

species or to their foods. Wildlife may suffer loss or damage from pesticide uses that are not damaging to agricultural or forest interests or to human health. Whenever the management or development of one resource affects another resource the undesirable consequences have to be weighed against the advantages. Where migratory birds are concerned the problem is particularly difficult, since they spend a part of each year in other countries in which different circumstances prevail. At present wildlife workers can only rely on the guide lines provided for agriculture or forestry purposes or for the safety of human health. And until adequate research is done to document the relative significance of current pesticide use its peculiar long-term effects on wildlife will remain undefined.

New problems, consumer demands and the requirements of importing countries all influence the type and scope of regulation and research required. Residues, resistance, and reconciliation of chemical and biological control are of both immediate and long-term importance. Greater participation by all the agencies concerned with research and development, the agricultural chemicals industry and the food and forestry industries would help to meet the growing need to strengthen research on pesticides.

OTTAWA

SEPTEMBER—1963

HOUSE OF COMMONS

First Session—Twenty-sixth Parliament

1963

SPECIAL COMMITTEE

ON

FOOD AND DRUGS

Chairman: Mr. HARRY HARLEY

MINUTES OF PROCEEDINGS AND EVIDENCE

No. 4

TUESDAY, OCTOBER 15, 1963

WITNESSES:

Dr. Robert Glen, Assistant Deputy Minister in charge of scientific work, Research Branch; Dr. H. Hurtig, Associate Director (Pesticides), Branch Executive, Research Branch; Mr. W. S. McLeod, Supervisor, Pesticide Unit, Plant Products Division, Production and Marketing Branch, all of the Department of Agriculture; and Dr. C. A. Morrell, Director of the Food and Drug Directorate, Department of National Health and Welfare.

ROGER DUHAMEL, F.R.S.C.
QUEEN'S PRINTER AND CONTROLLER OF STATIONERY
OTTAWA, 1963

SPECIAL COMMITTEE ON FOOD AND DRUGS

Chairman: Mr. Harry Harley

Vice-Chairman: Mr. Rodger Mitchell

and Messrs.

Armstrong	Fairweather	Orlikow
Asselin (<i>Richmond-</i> <i>Wolfe</i>)	Francis	Pennell
Baldwin	Gauthier	Roxburgh
Basford	Harley	Rynard
Cashin	Howe (<i>Hamilton South</i>)	Valade
Casselman (Mrs.)	Macaluso	Whelan
Côté (<i>Longueuil</i>)	Marcoux	Willoughby—24
Enns	Mitchell	
	Nesbitt	

(Quorum 13)

Gabrielle Savard,
Clerk of the Committee.

MINUTES OF PROCEEDINGS

TUESDAY, October 15, 1963

(4)

The Special Committee on Food and Drugs met at 9.45 a.m. today. The Chairman, Dr. Harry Harley, presided.

Members present: Messrs. Armstrong, Asselin (*Richmond-Wolfe*), Baldwin, Basford, Côté (*Longueuil*), Enns, Francis, Harley, Macaluso, Marcoux, Mitchell, Nesbitt, Roxburgh, Rynard, Whelan, Willoughby—(16).

In attendance: From the Department of Agriculture, Research Branch: Dr. Robert Glen, Assistant Deputy Minister in charge of scientific work; Dr. H. Hurtig, Associate Director (Pesticides), Branch Executive; *Production and Marketing Branch:* Mr. W. S. McLeod, Supervisor, Pesticide Unit, Plant Products Division. From the Department of National Health and Welfare, Food and Drug Directorate: Dr. C. A. Morrell, Director.

There being a quorum, the Chairman opened the meeting. After some remarks, he introduced the departmental officials present.

On motion of Mr. Enns, seconded by Mr. Roxburgh,

Resolved,—That notwithstanding the resolution passed by the Committee on August 1st, the quorum be set at 10 members.

As requested at the last meeting of the Committee, Dr. Glen tabled a résumé of the legislation of the provinces regarding the control of use of pesticides.

On motion of Mr. Basford, seconded by Mr. Mitchell,

Resolved,—That the document entitled "Provincial Legislation for Control of Use of Pesticides" be printed as an appendix to this day's proceedings. (See Appendix "A").

The members resumed questioning of the officials of the department of Agriculture. Dr. Glen, Dr. Hurtig and Mr. McLeod supplied information on the use and the misuse, the toxicity, the effects and the control of Pesticides, also on the research work done in this field.

On motion of Dr. Marcoux, seconded by Mr. Francis,

Resolved,—That a document presented by Mr. McLeod and entitled "*Data Respecting Toxic Hazard Evaluation Required in Support of Application for Registration of Pesticides*" be printed as an appendix to this day's proceedings. (See Appendix "B").

The questioning being concluded, the Chairman thanked the officials of the Department of Agriculture who retired.

The Chairman introduced Dr. C. A. Morrell, Director of the Food and Drug Directorate.

Dr. Morrell read a prepared statement. The Committee agreed to invite him and the other officials of the Food and Drug Directorate to be present for questioning on Tuesday, October 22nd.

At 11.50 a.m. the Committee adjourned until 9.30 a.m. Thursday, October 17.

Gabrielle Savard,
Clerk of the Committee.

EVIDENCE

TUESDAY, October 15, 1963.

The CHAIRMAN: Gentlemen, I see a quorum.

Before we commence actually examining the witnesses I wonder whether a member of this committee would consider moving the reduction in the number required for a quorum. It seems that we always are delayed a fair amount of time in starting as a result of some difficulty in assembling the necessary 13 members. As the motion to establish a quorum was originally made by this committee we have the authority to reduce that number without going to the House of Commons. Perhaps someone would like to make the motion that notwithstanding the resolution passed on August 1 the quorum be set at whatever number is desirable?

Mr. ENNS: Mr. Chairman, I so move and recommend that the figure be set at 10. It is unfortunate that we are always delayed in starting our meetings. Many of us have other commitments and when this committee does not commence at the appointed time we find that we must leave early with the result that we are not particularly useful to this committee. I certainly should like to see an earlier beginning to these meetings.

Mr. ROXBURGH: Mr. Chairman, I will gladly second the motion.

The CHAIRMAN: It has been moved by Mr. Enns, seconded by Mr. Roxburgh, that notwithstanding the resolution passed by this committee on August 1, the quorum be set at 10 members.

Mr. WHELAN: Mr. Chairman, I do not think such a move will answer the problem. I have attended every meeting that we have held and it is my impression that we should call the members of this committee and appoint perhaps 12 new members who will attend. It seems to me that many members who have been appointed to and accepted membership on this committee are not attending. I am personally aware of several members of the House of Commons who would like to be members of this committee. Many of the members of this committee at the present time are not attending the meetings except on those occasions when a vote is being taken, at which time they rush in and vote although they are not aware of what they are voting upon. I think we should poll the members of this committee at the meetings and then appoint new members.

The CHAIRMAN: This is something that should be discussed in the steering committee with the representatives of each party.

Is there any other discussion on the motion? Is the committee then in agreement with the motion?

Motion agreed to.

Gentlemen, the committee would like to get on with the further questioning of the officials of the Department of Agriculture. Dr. Glen, the assistant deputy minister in charge of the scientific work of the department, is here again this morning. His department is preparing a statement on the necessity for insecticides and pesticides in order to give us some idea as to how necessary they are in agriculture. I think this is something the committee should have. It will be presented as a paper later on for the benefit of the committee.

At the last meeting there was some request for a paper on the provincial legislation controlling the use of pesticides and insecticides. Dr. Glen has kindly had such a paper prepared. If the committee wishes it to be attached as an appendix to the minutes of today's meeting, that will be done; or if they would prefer to have separate statements, those could be given out to each member.

Mr. BASFORD: I move that it be appended to the proceedings.

The CHAIRMAN: It is moved by Mr. Basford that the paper on provincial legislation for control and use of pesticides be appended to the proceedings.

Mr. MITCHELL: I would like to second that motion.

Mr. WILLOUGHBY: I am not criticizing our secretariat by any means, but I have not yet received any minutes.

The CHAIRMAN: The printing department has been swamped with work from the privileges and elections committee.

Mr. WILLOUGHBY: If we are as long receiving this paper as we have been in receiving other things, it will be of no use to us.

The CHAIRMAN: Unfortunately, they were working on the privileges and elections report, and the long week-end has also delayed this work.

Mr. WILLOUGHBY: I realize that, but I would like to see this pamphlet.

The CHAIRMAN: I suggest we carry on with the motion. Dr. Glen could probably provide copies and we could mail them to everybody in the meantime.

Mr. WILLOUGHBY: That would be appreciated.

Motion agreed to.

The CHAIRMAN: There was one other question which I think was raised by Mr. Basford. He asked whether the committee could see any submissions from drug companies on products such as pesticides and insecticides. Dr. Glen has brought a great deal of material here, which I will ask him to comment upon later on.

Dr. ROBERT GLEN (*Assistant Deputy Minister, Department of Agriculture*): I will ask Mr. McLeod to do so since he has brought it here.

Mr. W. S. McLEOD (*Plant Products Division, Department of Agriculture*): I might say to the committee that this represents one submission of scientific evidence. Here we have two more. This one would be of interest to those members of the committee who are doctors or pharmacologists. It has more pharmacological data which were required from the applicant because of the nature of the chemical concerned. Here is another. These two represent average sized combinations. This one is somewhat larger than average.

Mr. NESBITT: How long does it take to approve an application?

Mr. McLEOD: I am afraid it is not possible to answer this specifically. We have to keep working on these until we either have the answers that we require in support of the application for registration so that we may issue a registration, or we send back to the company for additional data. While they are preparing the data, the petition rests and possibly a volume of the size of this one may be sent in as a supplementary submission. It is then studied, appreciated and again a decision is made. It may take one or two years to bring the procedure to completion.

Mr. BASFORD: Is that material supplied by the applicant? Is it not a combination of your material and the applicant's?

Mr. McLEOD: Our material is separate.

The CHAIRMAN: Perhaps we can go on with the questions. At the end of the last committee meeting Mr. Basford had some questions, and he has not completed them.

Mr. BASFORD: Dr. Glen agreed last week that there was a possible weakness in the Pest Control Products Act in that it did not cover the importation of pesticides by custom sprayers or by people importing products for their own use. Is that correct?

Mr. GLEN: Yes.

Mr. BASFORD: I am concerned with the question of the misuse of pesticides. It seems that the Act takes no particular account of the risk of misuse, and it seems to me conceivable that the risks of misuse could be so great as to outweigh the advantages of allowing their use.

Mr. GLEN: I believe that misuse is a very difficult thing to legislate against. You indicate how materials should be used, and a good deal of responsibility is then on the user to read the directions and to follow them.

Mr. BASFORD: I know we come back to, I think it is your statement, that you cannot legislate against a man's stupidity, but in many instances we do this, not to protect him possibly but to protect the public, and many of the statements that were made by your own department raise the question of the problems of misuse. In the statement by Dr. Chapman on the control of pesticides he says:

Our experience has indicated that almost all instances of excessive residues are the result of improper use of the pesticide. It appears that some producers are ignoring directions for use despite the best efforts of agricultural extension personnel to educate them to the hazards involved.

There are many more statements like that.

Mr. GLEN: This would be a common problem, I think, in any use of drugs and pesticides and chemicals. In other words, you point out in the directions how to use them properly. You indicate the precautions that must be followed. Misuse is a term that has really no limits.

Mr. BASFORD: Is it not conceivable that risks of misuse would be so great as to warrant the complete restriction?

Mr. GLEN: I would not think so. I think the same risk of misuse is present with us in nearly all of the resources that we use.

Mr. BASFORD: I am concerned. I am sure you are familiar with this United Nations report on the principles governing consumer safety. In paragraph 10 they outline four methods of control over the whole question of pesticides. It seems to me, in reading those four methods, that Canada's procedures do not comply with any of them. Have you that report in front of you?

Mr. GLEN: I think Dr. Hurtig is familiar with that report and perhaps he would care to comment.

Dr. H. HURTIG (*Department of Agriculture*): I do not have a copy of that report with me although I believe I am familiar with that to which you have referred. Are you referring to the joint FAO-WHO report?

Mr. BASFORD: Yes.

Mr. HURTIG: I am one of the authors of that report.

I believe the four steps described therein are not necessarily steps but are the four degrees of control which have been developed as recommendations for member governments of the United Nations.

In drafting this report on the problem that was assigned to us one aspect which we had to bear in mind was that many of the developing nations do not have any technical facilities whatsoever. We also had to bear in

mind that this report should develop recommendations all the way from those suitable for the most undeveloped country through to appropriate for the most sophisticated country including our own.

The four levels described are, as briefly as can be contained in a report of this nature, a digest of really what are the four common denominators of the systems in existence today.

I believe the first step—and I am giving you this information from the top of my head not having a report in front of me—was an extremely restrictive approach for a country that has no facilities for registering products; no technical staff capable of evaluating data of this type and no analytical facilities to check on the fact that the consumer is getting a dollar's worth of material in the package being sold and checking with respect to the residues that might result from application.

In other words a country is completely relying on the information supplied from elsewhere and has only a minimum staff to evaluate that information.

Without covering all three methods, the fourth method is used by the more advanced countries.

Mr. BASFORD: It seems to me that Canada falls short of that fourth method.

Dr. HURTIG: The fourth method involves the principle that all pesticide products are registered for sale but the sale and use of the more toxic products are further restricted and sometimes prohibited.

Mr. BASFORD: I do not think that Canada complies with that last provision.

Mr. W. S. McLEOD (*Department of Agriculture*): There are products that have been refused registration in this country.

Dr. HURTIG: As an example, you cannot buy 1080 because it is only available to licensed operators.

The fourth method assumes that there is a food and drug directorate and that the food and drug directorate is capable of handling examination of food supplies and following up on use of these pesticides in the country.

Pakistan is an example of a country where the government controls all importations. The government buys all pesticides and turns them over to the farmers as well as individual supervisors. The supervisor controls use of the various pesticides; the cost of the whole operation is collected from the farmers in the form of taxes. This method is used because in some cases the government feels that they must use the cheapest possible type of pesticide which may be an extremely toxic one and must be kept under tight control.

Mr. BASFORD: Regarding the fourth method you described, which in effect further controls the use of the more toxic products, and you mentioned 1080, although this can be acquired under only certain circumstances, the Act does not control the use of such products.

Dr. HURTIG: I think there is a very important factor that has not been mentioned yet. We alluded to it very briefly in our discussions last week but did not discuss it thoroughly.

I think the general impression may be held that pesticides are sold as the result of advertising. I think those of you who have been associated with agriculture are aware that there is a growing tendency in agriculture to rely more and more on extension specialist advice. I alluded last week very briefly to the role of the advisory committees on pest control in the provinces. These advisory committees play an extremely important role. No pesticide will be recommended in any province in Canada unless the provincial advisory committee has examined the use of the pesticide in that province, regardless of registration or

not, and its suitability for use in the province has been established. This results in restricting very largely the number of pesticides that will or will not be used in a given area. This is not left to choice but to the wisdom of the local advisory committees, because they are more closely in touch with the problems of a given area and know the material, the method of use or the method of application to be used. It might be suitable in Ontario but not suitable in British Columbia. These committees analyse these materials and uses bearing in mind the local conditions for use.

I will give you an example of this procedure. Three years ago the National Committee on Pesticide Use in Agriculture appointed a working party in the western region to review all the recommendations on the books of the western provinces including British Columbia for pesticides for livestock insect control. There were 900 recommendations that had built up over the years. As a result of their three year review there are only 81 recommendations being made in these provinces at the present time. Even though there may be 800 products on the market there are only 81 that have been recommended by the advisory committees.

The bulk of livestock growers will follow the recommendations of these committees. I believe Mr. Roxburgh would agree with me in that statement.

Mr. ROXBURGH: That is quite right. We have an organization in existence in our county and we do look at the advertisement but the final decision is made on the basis of the advice received from the extensionists.

Mr. BASFORD: This statement would apply in respect of only the responsible growers.

Mr. HURTIG: The pamphlets issued by the provincial governments only contain those materials recommended by the provincial advisory committee.

Mr. BASFORD: It would only be the responsible grower, I assume, who will comply with these recommendations?

Mr. HURTIG: The same problem exists in respect of the use of firearms, cars and many other things.

Mr. ROXBURGH: If an individual is not a responsible grower he will not exist for any length of time in the business.

Mr. BASFORD: We do legislate against misuse of firearms.

Mr. HURTIG: We also have the Food and Drug Act which applies to the illegal contamination of food.

Mr. GLEN: Mr. McLeod could probably specifically comment on control of chemicals under the Pest Control Products Act.

Mr. BASFORD: I am confused by section 12(d) of the Pest Control Products Act which says that the minister may make regulations:

- (d) prescribing the pest control products that are generally detrimental or seriously injurious to vegetation, domestic animals or public health when used according to direction;

I am a little confused as to why we need regulations covering that. Surely they are not registered in the first place.

Mr. MCLEOD: I would like to refer you to section 5(d) of the Act which covers our approach to our work. If we find a product is generally detrimental or seriously injurious, then the registration is not granted.

Mr. BASFORD: Then 12(d) is just allowing you to register.

Mr. MCLEOD: It states that the minister may make regulations but experience has shown that it has been unnecessary for the minister to make such regulations because officers of the Pesticide Unit have refused registration on the basis of the section to which I referred.

Mr. BASFORD: We had some discussion last week about toxicity of the pesticides. I notice that when an applicant applies for a registration he must at the same time file the research matter as to toxicity.

Mr. McLEOD: This is covered in regulation 5 on page 12 of the Act. This outlines in rather broad terms the type of information that may be required in support of the application for registration. We in the Pesticide Unit have amplified that by preparing a mimeographed form of our own statement of the data that we would require. This applies primarily to the first time of registration of a new chemical. We have registered fifteen such chemicals so far this year. We cover four main topics, and at that point there is this note: "Based on the information supplied in answer to items 1 to 4, it may be possible to decide which of the following items will be required." Then we step into the discussion of some seven further items dealing largely with toxicity. All these items have to be considered before the final decision is reached.

Mr. BASFORD: So when a product is registered you have the toxicity rating?

Mr. McLEOD: Yes.

Mr. BASFORD: I am just curious about the regulation upon which you are relying, 5(3)(b) which provides for the

... protocols of experiments establishing the comparative mammalian toxicity of any new material contained in the product,

But what about the combination of ingredients in the product?

Mr. McLEOD: This also is assessed. We lay greater stress on this type of assessment of combinations of ingredients where we have reason to believe from past experience that the combination may inherently be undesirable or hazardous.

Mr. BASFORD: I am not a scientist but I would think the combinations might be more toxic than the single ingredient.

Mr. McLEOD: This is the attitude we take. We take the attitude that they may be more toxic, and if we have this suspicion we will require proof from the applicant or from some other source before the decision to register will be made.

Mr. BASFORD: What does the applicant have to do in regard to showing the experiments of tolerance of pesticide residue?

Mr. McLEOD: That would be dealt with by the officers of the food and drug directorate.

Mr. BASFORD: Does the applicant have to provide material on this?

Mr. McLEOD: If it is not available from other sources he will be required to supply such evidence.

The material I have put on the table contains masses of reports of various foods treated by known applications of the various chemicals. These have been tested and analyzed and the residues have been reported.

Mr. BASFORD: I notice we have residue tolerance for some 70 pesticides but we use a great deal more than 70. I am curious as to what is the situation in regard to the others.

Mr. GLEN: That would be a decision made by food and drug because residues bear on the food aspect, and they set the tolerances.

Mr. BASFORD: Then I will wait for the food and drug people for that. I am just wondering whether, the applicant has to supply you with a method of analysis which is acceptable to you when he applies for registration. I notice in the regulations that you can lay out methods of analysis in order to find the chemical analysis of the various chemicals involved in these pesticides.

Mr. GLEN: If we do not have one of our own, we require it of the applicant.

Mr. BASFORD: I am just getting to the point. It seems to me that if the manufacturer wants to sell these he should pay for the research.

Mr. McLEOD: In general he does.

Mr. BASFORD: You mentioned last week that this research material is confidential.

Mr. McLEOD: Yes.

Mr. BASFORD: I am just curious about another recommendation in this United Nations report, paragraph 21, which says that it may be presumed that those pesticides have demonstrated their safety to the controlling authority, and then:

The meeting urges that FAO and WHO use every effort to persuade investigators to publish their past and future studies in adequate detail.

It would seem to me that if this material were made public or available to someone working on the effect of pesticides, for example, or a university grant or fellowship, he would already have available to him a great fund of material.

Mr. GLEN: Yes, this is generally true. The difficulty arises where a man is presenting a case for a new material or substance that has not previously been used as a pesticide. In that case we require certain information before registering, and the chances are that there is not very much backlog available if this in fact is a new compound. With the old compounds like DDT, and others which have been on the market for some time, there is a large body of information from universities and other sources which is available to all and sundry.

Mr. BASFORD: You have missed the point of my question. Your department receives all this research material, and according to this United Nations report you should be persuaded to make it public so that subsequent researchers have the material available to them.

Mr. GLEN: That is a very difficult thing because industry is competitive, as you know. If an industry has spent very large sums of money in developing a new chemical, they do not want their competitors to be able to step in and scoop them on this. Therefore they present the material to us in confidence. I might say that we can require certain information from industry. If we are going to do some work on a substance, we ask them to let us know, in confidence, the content. Then the research people have this information, but it is not made public at that stage because of the competitive nature of industry.

Mr. BASFORD: I can understand the secrecy required in the manufacturing process. This is something the manufacturer is entitled to keep to himself. But his research material on the effect of the pesticides, which he has to file with you, both as to their safety and their effectiveness as a pesticide, surely can quite easily be made public.

Mr. GLEN: I think I am correct in saying that the information as to the effect of a pesticide is quite quickly made available.

Mr. HURTIG: There are two aspects of this which very quickly reach open literature in scientific journals. There is an increasing trend on the part of the companies to realize—and this was alluded to last week—that for their own public relations, rather than have the company laboratories do the work it is better to have university grant work undertake this in the developmental stage before applying for registration. In this way they have qualified investigators who are recognized by the scientific community and whose results and opinions will be above reproach, even though the data and opinions of the scientists in the company would be above reproach also. These people are encouraged to publish their findings even though publication may take a year

after they have been submitted, and the original manuscript may be in the submissions to government agencies. Eventually, however, a good deal of this material is reaching the open literature where anyone can examine it.

Mr. BASFORD: From the manufacturers, not from your department?

Mr. HURTIG: It is from the manufacturer and from the private investigator in the university, the state research station employee, or even the company investigator. While these investigations may have been concluded early, there is a delay in reaching the open literature.

Mr. BASFORD: These pesticides have to be registered and given a number. Under the Pest Control Products Act do you maintain an index of pesticides that is open to the public?

Mr. McLEOD: We consider that any information that appears on the label of a product in compliance with this Act is public information and we will release such information to any person who may request it.

Mr. BASFORD: I asked this question for a specific reason. I have a letter from my pharmaceutical association which says that in view of this fact the association's drug advisory committee in the fall of 1962 commenced to compile a listing of all known poisonous chemicals contained in pesticides and similar products presently on the market. This monumental task was completed early this year. It seems to me that if these pesticides are registered under the Pest Control Products Act, there could quite easily be a complete index of registered pesticides and their trade names and so on. So that everyone who wanted to know would know exactly what pesticides there are in Canada.

Mr. McLEOD: There has been discussion by a working party of the National Committee on Pesticides Use in Agriculture on the possibility of publishing such a list. In preparation for this, my unit has prepared an appropriate index, but staff and financial problems have prevented us from finding any way of publishing that list up to the present time.

Mr. BASFORD: I am not necessarily suggesting that it be published, but it certainly should be available for inspection.

Mr. McLEOD: It is available for inspection; it is not yet available for distribution because of staff problems.

Mr. BASFORD: It is then possible to check with your department and see a complete list of the chemicals involved and of their trade names?

Mr. McLEOD: Yes, I have that file in my office. It is now in excellent working order and by the end of December it will, I trust, be in practically perfect condition.

Mr. BASFORD: I take it that rather than do all the work, my pharmaceutical association could have checked with you.

Mr. McLEOD: Not in 1962, but now, yes.

I would hope, under the present circumstances, that they would be prepared to send someone to my office to do the compiling from our file.

Mr. BASFORD: Is it your intention or your hope to be able to publish it?

Mr. McLEOD: If staff conditions improve to an adequate degree, I would be prepared to do that. This matter would be referred, as I suggested, to the N.C.P.U.A. and by that Committee to the Coordinating Committee of the department.

Mr. BASFORD: Do you regard it as valuable?

Mr. McLEOD: I do not rate it with a high priority.

Mr. BASFORD: I do not know what the priority is but would it be valuable?

Mr. McLEOD: It would be valuable.

Mr. GLEN: To some people.

Mr. HURTIG: Extension specialists have been asking for this and this is one of the reasons that work on this has been started.

Mr. BASFORD: They would like it so they would know exactly what is available and what is on the market.

Mr. HURTIG: They have such a tome prepared in the United States, and it took an immense staff to compile it. It is very expensive to maintain and to keep up to date and to recover any part of the cost of putting it out.

Mr. BASFORD: Would it not also be valuable to the medical profession who must be becoming quite confused with the number of pesticides on the market?

Mr. HURTIG: The Department of National Health and Welfare operates poison control centres across the country. I am sure Dr. Morrell could answer questions on that.

Mr. GLEN: Pesticides are only part of the poisons.

Mr. BASFORD: I know. I have one question about household pesticides and a statement, the source of which I am afraid I do not have except for this statement by Dr. Thomas Patterson which says:

In Canada, the main value of controlling household pests is one of removing a nuisance rather than being of economic or health importance to the public. There is not, then, the justification for making available to the public all of the toxic chemicals now on the market.

Are we doing anything in line with that last sentence? It seems to the public that all of these chemicals are available to them for household use.

Mr. GLEN: And for backyard gardens, and this type of thing.

Mr. BASFORD: One statement says:

There is not, then, the justification for making available to the public all of the toxic chemicals now on the market.

Would you agree with that?

Mr. GLEN: I think that is a matter of opinion. This is something that has to have more consideration before I could make a definite statement on it because the toxic chemicals that are available for household use are certainly put to very good use in many instances. One would have to assess what the significance would be of withdrawing those before I could make a statement quite as sweeping as that.

Mr. BALDWIN: Mr. Chairman, I would like to make this comment and then ask a question. I think Mr. Basford has developed in part a line of cross-examination originally opened up by Dr. Rynard which, I think, shows to me, in any event, that we have problems. The Pest Control Products Act, we feel, should have control to licence, regulate, register, and to some measure protect so far as manufacture, sale and control of pesticides are concerned, but the big area of doubt and possible danger is the use of pesticides by others. Now then, may I read, to accentuate that, a very brief comment taken from the British report, which could only emanate from England, the second report of the joint committee of the British trust for ornithology and the royal society for the protection of birds on toxic chemicals, in collaboration with the game research association. This is dated January to June, 1961, and on page 15 appears this statement:

Too often in considering the use of toxic chemicals, the possibly disruptive biological effects are not appreciated: the argument for the use of these substances is largely on the basis of food production,

economics or human welfare. More emphasis should be placed on their side-effects, disruption of biotic food chains, aesthetic considerations, and human values apart from food production.

And also this statement:

Although the onus of responsibility for ascertaining the potential hazards of a given chemical should rest upon the manufacturer, the responsibility for any undesirable effect should be upon the person using them—whether it is a government body, a large or small organization, or a private individual.

Now my questioning comes down to this. We have taken that principle, as someone said, applied it in relation to dangerous substances per se, such as firearms, explosives and automobiles, weighed criminal negligence and considered sections in the Criminal Code which places the onus on people who use such substances in such a way as to cause danger to life and possibly to property. Has the department given any consideration to possible amendment of the Criminal Code to establish a very specific duty, casting an onus or a burden upon those using these dangerous pesticides, and then providing for a breach of this duty to be an offence?

Mr. GLEN: I do not believe that our department has given serious consideration to this, Mr. Baldwin, largely because the use of pesticides has been held to be primarily a provincial matter.

Mr. BALDWIN: Yes, I understand that, but I think I asked a question last week in which I suggested that, like the Food and Drug Act, the Pest Control Products Act rests on a fairly narrow foundation of legality of the Criminal Code, or possibly the peace, order and good government section of our constitution. This being the case, the Criminal Code might well be applied—and I am just offering this as a suggestion—by way of creating a fairly specific duty. For example, I have here a section dealing with explosives which simply states:

Everyone who has an explosive substance in his possession or under his care or control is under a legal duty to use reasonable care to prevent bodily harm or death to persons or damage to property by that explosive substance.

I do not suggest using these precise words but something along these lines, casting the onus upon the individuals using these substances, because in recent years we have found these substances may possess great danger potential. It could be made a criminal offence to be in breach of that duty.

Mr. GLEN: I do not believe we have anything equivalent to that.

Mr. BALDWIN: I will leave it at that, just as a suggestion.

I have one more question. Last week someone asked a question whether or not people who inspected meat at the livestock plants and so on took any readings as to toxicity to determine whether there was any poisonous substance or any rise in such substance in the carcass. The answer I think was that the agricultural people doing this only checked for grade. I noticed in another English report, the special second report from the estimates committee, session 1962-63, printed by order of the House of Commons, there is a recommendation on page 6, recommendation 140.3., which states:

Surveys are in hand to determine residue levels in:—

- (a) imported and home produced mutton;
- (b) imported wheat;
- (c) liquid milk;
- (d) imported and home produced butter.

Further studies are planned on:

- (e) apples;
- (f) potatoes;
- (g) lettuce and brassica crops.

Have we anything being carried on along these lines?

Mr. GLEN: This would be in food and drugs.

Mr. BALDWIN: That is all I have to ask.

The CHAIRMAN: Dr. Rynard.

Mr. RYNARD: One of my questions has been answered.

The first thing I would like to ask is whether you have the antidote on all the cans of insecticide and such like which are sold. Is the antidote stamped on all the cans?

Mr. MCLEOD: The labels do bear a statement which, in the majority of cases, is a statement of appropriate first aid. The fact is that a true antidote, a specific antidote, is not available for many products. Consequently appropriate first aid, for example in the case of poison having been swallowed, will consist of evacuation of the stomach. Directions to this effect will be on the cans. This is one of the requirements for labelling.

Mr. RYNARD: How long has that been the case?

Mr. MCLEOD: Since before the time I entered this type of work; I would say at least since 1939 if not farther back.

Mr. RYNARD: It is interesting to note that we had a case of a certain hospital having a child who was supposed to have taken one of these products used for flies. We could not find any antidote on that can and we did not have any in the hospital. We telephoned Toronto, but they did not have any there. That was about seven years ago. I wondered if you had caught up with that because it seemed to me that it was not long ago that this was the case.

Mr. MCLEOD: The antidote is required to be printed on the label if an antidote is known.

Mr. RYNARD: This continuing study has been made and I am wondering whether there have been any similar studies on fertility of men and animals?

Mr. HURTIG: I will not speak about man; I will leave that to the food and drug people. However, on the animal side, the National Committee on Pesticide Use in Agriculture set up a working party made up of specialists in the physiology of animal reproduction. This working party consists of the best specialists available in Canada—and they are few.

Mr. RYNARD: Where does that operate?

Mr. HURTIG: They are examining the available information and their terms of reference are to define whether or not a problem does exist; this work is in progress now.

Mr. GLEN: The committee operates under the Department of Agriculture.

Mr. RYNARD: Is that provincial or federal?

Mr. HURTIG: Federal, under the auspices of the National Coordinating Committee on Agricultural Services, but the National Committee on Pesticide Use in Agriculture is made up of members from federal research agencies, including wildlife, agriculture, health, provincial extension authorities, provincial agricultural colleges, and the pesticide industry. Therefore the membership of these working parties is drawn from this wide pool.

Mr. RYNARD: Such surveys have been going on?

Mr. HURTIG: This work has just been started. It was started in 1963 and is now in progress.

Mr. RYNARD: It has just started? You have not had anything previously?

Mr. HURTIG: There is nothing in the literature today which suggests in any way, shape or form that the pesticides on the market interfere with reproduction if used according to the instructions for use.

Mr. RYNARD: There is nothing to indicate that they do?

Mr. HURTIG: There is nothing in the scientific literature today to suggest this; but some members of the national committee felt they wanted to be reassured on this so the work was assigned to people who are specialists in this field.

Mr. RYNARD: It seemed to me that the absorption of many of these comes back to the use of oils. I am prompted to put this question because of a man who was supposed to use a certain oil spray to kill a weed who, on running out of the oil spray, used a water spray and found that the water was better for this kind of thing. I am wondering if we are not away behind in research when we can come up with this type of example of something which is much more effective even though it has not been advertised for the specific use.

That prompts me to ask another question. This comes down almost to the provincial governments entirely, does it not? The sprays are turned loose and people spray thousands of acres, using them in all the barns across the province. I am sure your people do not know what is going on in those places because you have continuing problems there that only the veterinarians and farmers know about in those provinces. There must be a mass of knowledge there that we are accumulating very slowly.

Mr. HURTIG: I would say we are in very close touch with what is going on. We work very, very closely at all levels, right up from the individual farmer through to the national associations. For example, there is constant and continuing liaison with the National Dairy Council and the National Dairy Farmers. They are interested in this matter. They have a product which they want to keep above reproach—milk and milk products. They are interested in conveying to their membership every piece of information that can prevent the sort of things from happening to which you have been alluding. If you are a milk producer, when you get your cream check or fluid milk check you will get a check stuffer periodically warning you about the things you ought not to do. I have only singled out one national association but many others work in the same way since they realize that the acceptance of their products by the consuming public depends on maintaining confidence in their product.

Mr. ROXBURGH: May I just add that a number of the industries also have their field men checking. Agriculturally I think we are exceptionally well covered. However, I do not know about the type of use made by the housewife, for example.

Mr. RYNARD: I just wonder about those things because I think you have to learn in the light of experience. I remember cases where we had whole batches of cheese thrown out because we did not know the effect of penicillin. Being associated with public health for a great many years, I have seen so many of these things which have come up by trial and error. I wonder just how much we are really going to gather if we do not have a continuing study on fertility and all of those things. I think it is a very important matter. I have seen so many facets. Only when we were using these things were we finding the troubles. I referred to penicillin and the use of antibiotics in a cow. In how many humans are we causing an allergy? There is a whole host of these things on which we have to keep an open mind because we have not all the answers, we have only a few of the answers.

I will go on with this later. That is all I have to comment upon now.

Mr. NESBITT: I believe one of the witnesses earlier this morning mentioned that as far as the use of insecticides and pesticides is concerned most farmers accept advice from agricultural councils and the like. This clearly does not apply to householders who use these things in the home and garden to a very great extent. I just want to make sure in my own mind of the answer to the question I asked the other day. Are there any regulations regulating the advertising of these household pesticides and insecticides? Advertising in the press, on the radio and the like induces people and encourages people to use these things. I wonder if there are any regulations setting out the form or extent to which these substances may be foisted on the public.

Mr. GLEN: I am not sure that our act specifically covers advertising.

Mr. McLEOD: The act has been interpreted as covering advertising. Section 9 of the regulations of the act states in sub-section (1):

No person shall make any claim as to the effectiveness or purpose of a pesticide unless the claim is set forth in the application for the registration of the pesticide.

Sub-section (2) provides:

No person shall sell any pesticide under any directions for use unless those directions are the directions to which the registration of the pesticide relates.

In the enforcement of the act we do not have staff to scrutinize all advertising but we have found by experience that we will receive a complaint when violations of this regulation have taken place. I might say that at this present time I am exchanging letters with a large Canadian company which I am taking to task for making advertising claims which are not in harmony with the registration of the product concerned. This is going to upset the company rather badly because, from the sound of the advertisement, I think it came straight from Madison Avenue in New York. They are going to find now that they are working in Canada and selling the product in Canada and that they cannot get away with the type of advertising they may get away with in other countries.

Mr. NESBITT: I am gratified to hear this. I have one more question. In view of the fact that a number of pesticides and insecticides are used in the same area in a period of time and have been building up poisonous residues, the effect of which may not be certain in many cases, does the Department of Agriculture at any time take samples of soil, water and food in any area suspected of having a build-up of dangerous residues, and are the results analysed, collated and research done on these results?

Mr. HURTIG: I am sure you will appreciate that this whole subject of the new organic pesticides is a relatively new area and many of these problems that you have mentioned have only come to the attention of the research people within the last decade. Our ability to do these things has grown up slowly, within the last decade. We have developed our ability and resources to do this depending on where we thought problems were going to occur. The best educated guessing would suggest to us where it might occur.

We do three things in this area. We have a formal policy for the evaluation of new pesticides. This requires that the manufacturer, before he has any thought that he might want to register a new compound for sale in Canada and obtain tolerances for residues under the Food and Drugs Act, must clear with the research arm of the department the properties of this product and enter into formal agreements with us to do an evaluation of it. In the course of this work we insist that he obtain certain information. This is a condition of our doing collaborative work with him, so that even before a compound becomes, as you

might say, commercial, we have certain information on its potential for creating a problem. Then, after the compound comes on the market, there are two things that happen: the food and drug people routinely sample our food supply, and, in addition, we have a very good liaison with the food and drug people in two ways, in that we report to them through their regional laboratories working with our regional people and suggest to them where unusual insect or plant disease situations exist which may lead to heavier use of insecticides than normal.

For example, in the Niagara area, if they have a very dry year there may be a greater need for late applications of pesticides for the control of oriental fruit moth and this allows the food and drug people to focus their resources in an area where there is a propensity for trouble. Secondly, I have in mind a case that appeared in 1962 or 1963 in British Columbia where, without available information suggesting to us that this could become a problem, a certain pesticide that was known to convert to a second more stable pesticide accumulated in soil. Previous information suggested this would not create a problem, but in certain sandy soils it turned out that this created a residue problem. As a result certain shipments of potatoes were withdrawn from the market. Because of this we set up a joint study between ourselves and the food and drug directorate to sample the situation with this pesticide and the potato crop across the country, in all the representative commercial potato producing areas in the country, not as a punitive measure but in order to get information. The result of this survey suggested to us that there was only cause for apprehension in a particular soil type and under certain conditions of use. This is the type of thing we have to do if resources are available. We focus our attention on the problems to which our best educated guesses suggest we should give attention.

You alluded to this matter of food chains, build-up and transference. This is a relatively new area. We are strengthening our ability to work in this field now, but recruitment of people is very difficult. However, we hope that we will have a small number of people who can work in this field. We are intensifying our effort to recruit or train specialists in this area.

Mr. NESBITT: I take it that at the present time, with educated guessing as against investigation, you do in fact take samples of soil and perhaps water supplies and so on in areas where you suspect there might be some reason to believe that there is some dangerous build-up of residues. Is that not done yet generally?

Mr. HURTIG: We are not an enforcement agency on water.

Mr. NESBITT: I am not referring to any type of enforcement agency, but for your own information or the information of the public. For instance—perhaps I am not making myself clear—in one of the residential suburbs of Ottawa you have householders acquiring all varieties of insecticides both for use in the house and in the garden. After a period of time I would presume there might be some possibility of a dangerous build-up of residues which would either remain in the soil or eventually get into some of the water supply. What I want to inquire about is whether it is likely that there will be a program for such a study being carried on. This is a new subject, we all know, and I wondered whether there is a likelihood of having samples made to find what the effects are, similar to the samples taken for the radioactive fallout.

Mr. HURTIG: There is another method and this again is new. For the past few years we have been encouraging provincial governments to take an interest in this matter. They are now in the position we were in ten years ago. The Department of National Health and Welfare makes grants available to provincial governments to set up services of this nature. Three provinces, Alberta, Manitoba and Saskatchewan, have in one way or another taken advantage of this

and have set up laboratories to do the type of thing you suggested. In Saskatchewan in particular there has been much interest in water because on many farms the P.F.R.A. dugout is the only source of water for families and farm animals. In Saskatchewan they are doing the whole range of sampling but concentrating more on water than they might in other provinces. Ontario has set up a committee to examine their need for such a service and we are encouraging all other provinces to do the same. Hearings are now being held in British Columbia right now on this matter. The provinces tend to provide this because they are particularly jealous of their ability to give service to the public.

Mr. NESBITT: Drawing an analogy between this and the collection of data, as is done with radioactive fallout throughout the world, is information of this type obtained in other countries similar to Canada, such as the United States for instance, and do they have any material that is available to us?

Mr. HURTIG: Yes, we have a tremendous amount of material. We have a pesticide technical information office in the Department of Agriculture in Ottawa and I do not think there is one of its type anywhere else in the world. We cannot accumulate the vast amount of information that the United States is capable of accumulating and digesting, but we have access to these sources of information. I would say Canada and the United States are doing more in this field—the United States first and Canada second—than any other country in the world.

Mr. NESBITT: I have one last question. If someone had thought, or had reason to believe, there might be a dangerous build-up of some of these residues in their area, could they request the Department of Agriculture to come and take samples and make an appropriate analysis?

Mr. HURTIG: We have no provision for doing this.

Mr. BASFORD: Has any government department?

Mr. HURTIG: Provincial governments provide soil sampling services. They also provide water analysis services and milk analysis services. Traditionally this has been a provincial function.

Mr. NESBITT: Does that cover this particular aspect of soil and milk analysis? If you want to find what this soil is composed of, what fertilizers you need, then of course your provincial government does that, but do they also do this sampling of build-up of residues from various insecticides?

Mr. HURTIG: There is no research going on in the agricultural colleges of the country on this subject.

Mr. ROXBURGH: All this research costs money and at the present time it is all pretty much governmental, but has there been anything done by industry itself to make available a certain amount of money, a loan, to help outside of the work they are doing themselves? They are not going out and doing this. I think Mr. Nesbitt's question is certainly something that is going to have to be looked into. Are the companies themselves donating any small percentage of money towards work along those lines or not?

Mr. HURTIG: The Canadian companies would be delighted to be able to support this type of work in our agricultural colleges, or rather if there was capacity to do this in our agricultural colleges.

Mr. ROXBURGH: Why I am asking this question is that as an illustration of his case, Imperial Tobacco donated something like \$300,000 to help out on experiments. As far as industry itself is concerned, it would be something that could not only show their interest but is certainly a necessity.

Mr. HURTIG: There is research money available from the chemical industry in this country but this is a subject to which our Canadian agricultural colleges have not devoted attention.

Mr. GLEN: Industry has, in a few cases, I believe, granted scholarships or fellowships for certain specific lines of work at universities, but it is not extensive.

Mr. COTE (*Longueuil*): On the containers or on the cans in which insecticides are sold you have labels showing how to use it and saying what antidotes to take in case of poisoning: Are these labels bilingual?

Mr. McLEOD: This is left to the discretion of the company that is selling the material. Very frequently they decide the label should be bilingual so that it may be sold in both English and French-speaking areas. It is not compulsory. In fact, we do have some labels that are French only; whereas we have others that are English only.

Mr. COTE (*Longueuil*): In view of the importance of the method of using an antidote in case of poisoning, do you not think it should be compulsory that the warning on the label be bilingual? I think you will realize that in the French Canadian areas the people who are not bilingual are mostly those on the farms because that is where they do not use any English. You also have some immigrants, who are either German or Italian, and do not understand English but understand French better.

It seems to me that you should try to make it compulsory for the companies who want to sell their products in Canada to have bilingual labels.

Mr. McLEOD: It would then require a change in the Pest Control Products Act.

Mr. COTE (*Longueuil*): Could we ask for them to do this?

Mr. CHAIRMAN: I am sure the committee can make any recommendation it wishes.

Mr. COTE (*Longueuil*): May I move a motion?

The CHAIRMAN: I think the committee should do that when it is considering its findings at the end of its meetings.

Mr. COTE (*Longueuil*): Do you not think it would be a good idea for it to be compulsory to have bilingual labels?

Mr. McLEOD: There is merit, in my opinion, in the present situation in that a registrant may register his label in both languages and may print it according to his areas of distribution. He may have a portion of his production with an English label and the balance with a French label. There is merit in this, particularly because of the problem of finding enough space on the label with all that is required of the registrant now.

I would prefer not to make further comments on your suggestion, but to leave the matter of recommendations to the discretion of the committee.

Mr. COTE (*Longueuil*): In the provinces you will have some using the product who will not understand English and some who will not understand French.

Mr. McLEOD: And we have some people who can understand neither language, and they deserve some consideration also. The problem becomes quite complicated if you examine it in all its aspects.

Mr. WHELAN: I have only one comment and question. You said many countries had made a study of the use of pesticides for the United Nations report. How many countries were involved there?

Mr. HURTIG: In the report?

Mr. WHELAN: Yes.

Mr. HURTIG: This is a report of an expert committee. Expert committees sponsored by the various United Nations agencies do not represent their countries; they come as experts and do not necessarily reflect the opinion or policy of their governments. They are drawn from all sources—universities, governments, and so on. They are the best people the agencies can obtain.

Mr. WHELAN: The committee obtained this information on their own from these different countries?

Mr. HURTIG: That is right. They conducted surveys.

Mr. WHELAN: In your opinion, then, would you say that in Canada we have some of the most advanced technical and scientific advice to our users of pesticides and herbicides?

Mr. HURTIG: I would say yes, that is on a par with anything in the world considering our population.

Mr. WHELAN: Maybe I should not say this but I was rather amused at your suggestion of Pakistan, having just returned from Europe and talking to some Pakistanies at the convention. Their opinion was that their agriculture was very backward and that ours was very advanced. I could readily understand that they would have to have more control. What is annoying me is the suggestion, made even by some of the professional people in questions here, that Canadian farmers are a bunch of illiterates who do not know how to use the pesticides and that druggists and others are the smart people. This is annoying me.

The whole impression that has been put across to the Canadian public is that farm people are abusing the use of these pesticides. This is far from the truth as far as I am concerned. You used the analogy of automobiles being under the Criminal Code and so on. However, the number of people they kill every year does not seem to be controlled by the Criminal Code. What good would restrictions do, added restrictions on the use of these insecticides? I do not know what good it would do. Some of them are even going so far as to suggest licensing the use of insecticides and pesticides.

Mr. HURTIG: All this takes taxpayers' money. A law that is unenforceable is worse than no law at all and a law that requires inspectors and policemen costs money. This is only my personal opinion. I would prefer to see that money spent on research, on learning how to use these materials in a more intelligent manner, how to use them more safely and more economically. I would like to see part of that money spent on education of users. I would put research and education before regulation.

Mr. WHELAN: I was closer to death than at any other time when a doctor gave me penicillin and then had to give me a lot of junk to cure me of the effects of the penicillin.

The industry, you are suggesting, has put a good amount of money into our educational institutions and they are doing a good amount of research. If they are doing this, then we pay for it anyhow, so our government should be doing more. I brought up this question before and I will bring it up again. You say it is food and drug; I say again it is the Department of Agriculture and that their farms should be expanded for leaf testing and for testing of fruits and vegetables in order to find out how much absorption is going on with these crops. These can be worked perfectly with experimental farms and it is not being advanced as far as it should be for the protection of the people in the country and to help the people who are producing in the country.

Mr. RYNARD: I was the one who suggested a licence and I meant in part for those doing commercial spraying; and I will stick with that "in part" because a lot of those people need a lot of knowledge which they can and

would get. In such a case the people who hired them would know that they have knowledge and we would not see this story over and over again of damage being done where it should not be done. I certainly stick to it that they should be licensed and I think the day will come when they will be licensed. They do it commercially; they spray orchards and they spray land and damage has been done and there has been the threat of damages. I can give several cases of this and I cover only a small area. Surely the place to stop this is at the commercial sprayer; I do not see how you can do otherwise than to see that he is instructed and that he is a competent person. It is the public who have to be protected.

Mr. BASFORD: I would just add my point of view which differs from that expressed by Mr. Whelan. Mr. Don Robertson, the provincial entomologist in Manitoba, where they have set up regulations, makes this comment:

The new regulations admittedly are somewhat of an inconvenience to both farmers and dealers, Mr. Robertson says, but we've had to bring them in to increase awareness on the part of farmers to use harmful pesticides only in accordance with regulations. The added paperwork may be a nuisance but if these chemicals aren't used properly on the farm where food is being produced, there could be serious consequences.

As I said earlier, every report coming from our own agricultural department and from food and drug emphasizes the problem of having farmers use these pesticides correctly. I would go along with Dr. Rynard and say that this is an area at which we have to look very carefully.

I would like to ask a question with relation to research. I was astounded to hear that there was no research going on at our agricultural colleges into the whole question of pesticide residues and build-ups and this sort of thing. How much money is being spent in Canada on this sort of research, either government or private research? I know this can only be an estimate.

Mr. GLEN: We gave one estimate in the statement made by the minister as to the cost of research in the federal department for pesticides—the statement which he read on the first day.

Mr. BASFORD: I have not seen the minutes yet.

Mr. GLEN: There is a figure given there for the total cost of crop protection, and it is broken down to include chemical control as one part of crop protection.

Mr. BASFORD: I understand that is research on the effectiveness of pesticides.

Mr. GLEN: It is the total research on chemicals for pest control.

Mr. BASFORD: I am concerned about what is being done on the residue effects, the effects on wildlife for example. What sort of money is being spent on this?

Mr. GLEN: There is no breakdown that I know of that is as fine as that at the present time because the university picture is very fast moving. When you have graduate students doing research it is very difficult to keep track of their program because as soon as one fellow graduates his piece of work drops and you have to have a system to keep track of these changes. Such a system is not in existence at the present time. We are currently planning a system of surveying agricultural research in Canada so that we can provide a better picture than we have of the number of man-years, if you like, going into different facets of research. We hope we will be able to cover provincial and federal and industrial groups, but this is going to take time and at present we are struggling to get a base that will be acceptable to all these groups so that when we get the information it will be comparable and we will know what industry is doing and what universities are doing relative to the federal government, and so on. But at the moment we do not have this information.

Mr. BASFORD: That would be very valuable as a type of central clearing house for what is going on so that research can be co-ordinated.

Mr. GLEN: This would cover all areas of research, not just pesticides.

The university picture is not easy for an outsider to get because so many of the professors spend part time teaching. One year they might have five research assistants some of whom will graduate; and the next year they might have eight, then the next year three, and so on. It is hard to keep track unless you have a system that you can keep up and modify. Such a system has not been started yet.

Mr. BASFORD: I was curious about Dr. Hurtig's rather firm statement that pesticides do not affect reproduction. I would like to have his comments on a statement by Dr. N. W. Moore, head of the wildlife section of British conservation department, speaking to the British association for the advancement of science, when he says:

Every human being in Europe and North America now has small quantities of these chemicals in his or her system, Dr. Moore said.

High doses of pesticide can cause death. Low doses can affect reproduction. What we don't know is safety level of contamination.

Mr. HURTIG: My remarks were in answer to a question put to me by Dr. Rynard on man and animals, and I took animals to mean domestic farm animals. As far as wildlife is concerned, it is a well established fact that certain upland birds and certain migratory birds have had their reproductive capacity affected by residues. Incidentally, to answer your question in a larger sense, there is a joint committee set up under the joint auspices of FAO and WHO, that has just concluded meetings in Geneva. They have been studying data accumulated for them over the past year. I think they have been assigned the forty odd most common pesticides in world use and they have been studying data pertaining to their toxicity. They have just concluded their meeting. At the meeting they have been attempting to set acceptable intakes for man over a lifetime. Each country now involved in setting tolerances has done this. This work has been done in Canada, the United States and in various other countries. Now the experts from the various countries are getting together to try to resolve conflicting views based on the evidence in order to try and establish the safe intakes for man over a lifetime, including among other considerations this matter of reproduction in man.

Wildlife is an entirely new matter. This information on effects on reproductive capacity is comparatively new. The wildlife agencies are just becoming interested in this subject. I am familiar with Dr. Moore and the work they are doing over there. I am in close touch with him. Our own wildlife people are looking into this themselves.

Mr. BASFORD: Then your first statement was a little unintentionally misleading?

Mr. HURTIG: No, I would not say that. Dr. Rynard specifically said "animals and man", and I took animals to mean farm animals.

Mr. WHELAN: I think the agricultural producers are constantly aware of the dangers and have full knowledge of the dangers of anything they are using. I would say this, there is more information available to them on the use of these herbicides and pesticides or insecticides, or whatever you want to call them, than there is to many many other vocations which are giving these drugs to people.

I would say that they are conscious of this and they continue to demand, since I have been representative of my area, that more facilities be made available to them so as to give them more knowledge and help on this. They

are aware of this, and I reiterate this. Practically every farmer in the area I come from has a sprayer of his own. The commercial sprayers are bonded, and to get bonded and be properly covered by insurance they have to maintain the sprayer and see that it does a really good job. I am amazed to find out that commercial sprayers would be allowed to operate if they did damage. In our area if they did it once they would be out of business.

Mr. ROXBURGH: I should like to ask the following question. During the two meetings we had I had the idea, rightly or wrongly, that there could be a further expansion of facilities and personnel. We all realize there are discrepancies in such a large turnover in the whole set-up, and I was wondering whether you had given any thought in the department to the fact that there might be extra moneys coming from the government. Have you thought of any expansion possibilities in those fields, and do you think that if monies were coming you would be able to make good use of them if you were able to get extra personnel? Do you think you need it and could make use of it if that were voted upon?

Mr. GLEN: You mean in the field of pesticides?

Mr. ROXBURGH: Yes.

Mr. GLEN: I think I would like to answer your question this way. These questions that you gentlemen are raising have mostly been raised and discussed in our own groups at one time or another as we proceed from month to month and year to year in administering the resources we have. As Mr. Roxburgh said, we are under constant pressure to expand our research in so many different directions at once that we are obliged, rather than to consider any one area, to take the over-all picture.

Now, with respect to pesticides, we have expanded our resources in this field over the past five years or so. It has been a very slow and gradual shift, and I think it has been slower than it would have been had we had more resources. There is no question about that. However, even in spite of the difficulties and austerity and everything else, we have expanded in that direction, which in itself is evidence that we felt that this was necessary. Fundamentally we do feel that it is necessary, as new information becomes available, to move our frontiers onwards. This is getting us into far more intensive and difficult research than what used to be simply because our knowledge is to the point where we do biochemical and physiological types of research that are more precise and demanding than was formerly required. This means more expensive facilities, more highly trained people, and this is one of the areas that we are up against; that is, these specialists are not available. If we had a lot more money, we would be limited by the availability of trained specialist staff.

Now, we have recently been reviewing this subject again to some degree. You have a statement that was left with you the other day prepared by an interdepartmental committee of government representatives. That statement is largely descriptive. It tells you what their interests and responsibilities are. But the group which prepared that statement is continuing beyond that level to examine the areas we feel require more emphasis. This takes in six government departments. I am not sure what agreement we will reach with a group that is as diverse as this one because the broader the group the more difficult it is to reach common ground, except in very broad terms. However, one of the areas, that quite obviously needs attention is the difficulty of detecting chemicals; in other words the analytical aspects are in themselves one of the real problems facing us. It is not sufficient to know how to analyse for a chemical, you have to know how to analyse for it in the particular product in which it occurs. The chemist finds that if he is going to get this material out, he has to know how to dissociate it before he can analyse for its presence.

Therefore, it is a different proposition if he used the same pesticide say on an ornamental plant and on a cabbage. The cabbage is a very waxy plant and analysis for a given chemical on that plant may be a different problem from what it was on another plant. This shows you the ramifications of this field.

One of our real difficulties is following through with effective research, even in studying the degradation of chemicals; for example, how long does it take for a chemical to disappear after it is put out. Even in studying that question the basic requirement is a reliable method of analysis for whatever product you are working on. This in itself might take a piece of research before you get started on your main problem. I only use that to illustrate the kind of thing we have to consider. Generally speaking, we are going to have to give more attention to the pesticide field because as new information accumulates we realize the significance of doing so, and this is the history of the way we have approached the use of pesticides in the past.

Mr. ROXBURGH: In other words you could use more money and more personnel?

Mr. GLEN: We could use them in preparing a better research program. This is true of virtually every area of agricultural research, and this is a problem.

Mr. ROXBURGH: What you have to do is to make your final decision as to what is most important.

Mr. FRANCIS: Mr. Chairman, I look forward to having a chance to look at the statement which was read by the minister because Dr. Glen makes reference to it. I think he referred to six government departments being involved. The question that comes to mind is to review the scope of the research which is now under way which is relevant to the problem we are looking at at this moment. This is, of course, as Mr. Roxburgh suggested, concerned with where the priorities should be placed. We require a fairly good understanding of what is being done. It is clear there are many areas where questions still remain, but, for example, is the national research council represented on this group of six?

Mr. GLEN: No.

Mr. FRANCIS: How about Defence Research Board or the chemical warfare people?

Mr. GLEN: The Department of National Defence is represented.

Mr. FRANCIS: I was a little concerned with the co-ordination of research in universities. Which research programs are being undertaken systematically? Is there any federal grant or assistance which goes to universities comparable to what goes on in the health branch side which gives the federal people the means of keeping in touch with the research program?

Mr. GLEN: There is no federal grant to universities in this field from the Department of Agriculture comparable to that from the Department of National Health and Welfare.

Mr. FRANCIS: And the Department of Agriculture?

Mr. GLEN: The grants that go to universities in the agricultural field are almost wholly through the national research council.

Mr. FRANCIS: Are you participating in the discussion of boards on the review of such projects?

Mr. GLEN: Not regularly, but sometimes by invitation.

Mr. FRANCIS: Would it be of any use or assistance to the committee if someone from the national research council were invited to come here and give us a review of the methods of dispensing research funds and the assessment of funds, especially the funds that are going into this area?

Mr. GLEN: I think you would be better able to answer that after you have had your interviews with the different departments involved, forestry, fisheries, northern affairs and national resources, and so on.

Mr. FRANCIS: Excuse me, who are the six in the group?

Mr. GLEN: The six are: health and welfare, forestry, fisheries, northern affairs and national resources, defence, and agriculture.

Mr. FRANCIS: Certainly the questions that remain to be answered in this area, as I am sure in every other area of research that is undertaken, are quite staggering, but I am curious to know how effectively the total research effort is reviewed by some interdepartmental committee to get some sort of appraisal as to where the most serious gaps are and to get some indication of priorities.

Mr. GLEN: The group I referred to is not a committee designed for this particular job. It was brought together because it was realized that a number of departments, for one reason or another, had interests in the pesticide problem, and it was thought it would be useful to bring representatives together and discuss their various interests and responsibilities. Out of several discussions that were held came the preparation of a joint reference paper listing their interests and responsibilities or discussing them, and that is what the paper I was referring to contains. The Department of Agriculture invited the others to join, but it was one of these mutual affairs. There is no regulation behind it and no official status other than the fact that they came together of their own volition.

Mr. FRANCIS: How long has the committee been working?

Mr. GLEN: Almost a year, starting from about last October. The committee as a whole has only met twice, but the working party that was set up to prepare the reference paper met several times.

Mr. FRANCIS: Does the committee have any record of these meetings?

Mr. GLEN: Yes.

Mr. FRANCIS: Is it available?

Mr. GLEN: I am not sure what the status is, in this respect. I see no reason why it should not be available, except that I can speak as only one department represented on this committee. Some of the other five might not like the suggestion. We regarded the minutes as confidential minutes just for the use of the group itself.

Mr. RYNARD: I do not want to belabour this question of fertility but I do mean that it applies to human beings. We eat cattle, beef and other meat and probably—leaving out the commercial factors—the most important factor is what it may be doing to the young people or to the older people. I was interested in this comparison you are making. Is it true that we have on the North American continent five or six times the amount of absorption of D.D.T. that they have in Germany or Great Britain or in Europe as a whole? If that is the case, then their results are not going to be comparable to ours and are not going to help us very much. That is the point that strikes me. How are you going to get help from those sources? I understood you to say that you are all working together as an organization. What help are you going to get from those people, and are your results and conclusions not going to be wrong when we have five or six times the amount of those pesticides in our bodies and also when we eat meat which has five or six times the amount of pesticides?

Mr. HURTIG: I would prefer that you would aim any questions regarding the safety of the residues that now occur in the Canadian diet to the people from the food and drug directorate; that is within their competence, not mine.

Mr. RYNARD: That is fine.

The other thing I want to ask you is with regard to this licensing question. I was only doing this in the hope that we might save someone's life or that we might save some sickness. I think any doctor who practises and any pharmacist realizes that we have a lot of sickness emanating from spray. All we have to do to prove this is to take some of the American statistics. In the state of California you have a good number of deaths per year, over 100. Besides that you have many cases of sickness caused by insecticides, cases which they cannot estimate.

Mr. HURTIG: Each state has a different approach to this.

In the United States of America this is a matter which is regulated by each state. It is considered a state matter. California has a very highly sophisticated system. We have to bear in mind that their agricultural activities proceed for twelve months a year and there is continuous land use, multiple use of the same land. Their pest control problems are fantastically greater than our own and their use of pesticides is almost equivalent to what we would use in Canada. This is a guess, but I would suspect that their use in California is almost as much in a year as the total Canadian use.

Mr. RYNARD: But it does point up the seriousness of the problem.

Mr. HURTIG: Ontario is going towards the system of licensing the pest control operator, the custom sprayer. Some other provinces are doing this; it is a provincial matter.

Mr. BASFORD: In your consultation with provinces do you recommend that they set up this system?

Mr. HURTIG: If they ask for advice we give it.

Mr. BASFORD: What is the advice you give?

Mr. HURTIG: It depends on the situation in their province. If you are going to set up a licensing system for a custom operator you have to have an examination system; you have to offer an examination and therefore you have to employ on your provincial staff people who are competent. Therefore, you have to set up a school to train the candidates for the examination. Some people would like to set them up.

Mr. BASFORD: If the provinces are willing to spend this sort of money, do you recommend it?

Mr. HURTIG: Anything that would lead to the more intelligent use of pesticides I would be willing to go along with.

Mr. BASFORD: By that answer do you indicate that there is sometimes less than intelligent use of pesticides?

Mr. HURTIG: I would say this is the exception rather than the rule.

The CHAIRMAN: Gentlemen, if there are no further questions for the officials of the Department of Agriculture we should hear Dr. Morrell's statement so we can have it before us for consideration.

Mr. McLeod presented a paper. Is it the feeling of the committee that this should be reprinted or added to the proceedings as an appendix?

Mr. MARCOUX: I so move.

Mr. FRANCIS: I second the motion.

Motion agreed to.

The CHAIRMAN: I would like to thank Dr. Glen for coming back this morning and bringing the officials of his department along.

Gentlemen, for the rest of the time of the committee I suggest we hear Dr. Morrell. For anyone who does not know Dr. Morrell, he is the director of the food and drug directorate of the Department of National Health and Welfare. I think Dr. Morrell wanted to make a general statement to start with.

Dr. C. A. MORRELL (*Director of the Food and Drug Directorate, Department of National Health and Welfare*): Thank you very much Mr. Chairman.

A number of departments of the government of Canada have considerable responsibility for, and interest in, the use of pesticides. The Department of National Health and Welfare has statutory and advisory responsibilities in relation to the health of those who consume the foods on which pesticides are used and of those who are engaged in the manufacture and application of such products.

The statutory responsibilities are set forth in the Food and Drugs Act which is administered by the food and drug directorate. The occupational health division of the directorate of health services is a research and consultant agency that is concerned with the hazards from pesticides to those engaged in the manufacture and the application of these chemicals. The advice of this division is available to the Department of Agriculture which is responsible for the registration of pest control products in Canada.

The only regulatory authority over pesticides vested in the Department of National Health and Welfare is that provided by the Food and Drugs Act. Section 4(a) of this Act states that "no person shall sell an article of food that has in or upon it any poisonous or harmful substance". This section prohibits the sale of foods bearing any toxic residues of pesticides, but I wish to emphasize that it gives the directorate no authority to regulate the sale or use of pesticides.

Pesticides are beneficial to man when carefully and wisely used. They are widely employed in protecting our food crops from destruction by insects, plant diseases, weeds and other pests. With some exceptions that I will describe later, the sale of a food containing any trace of a pesticide is prohibited by the section previously quoted from the Food and Drugs Act because generally these are substances toxic to man. The Department of Agriculture collaborates with the directorate by refusing to register pesticide products if their normal use is likely to result in toxic residues remaining in or on a food when it is marketed.

In the main, pesticides are dangerous to man but only, like all poisons, if administered or ingested in sufficient amounts. If the amount is small enough, no harm will result; and this principle is recognized in the control of pesticide residues in food under the Food and Drugs Act. When pesticides are used by the farmer to protect his crops, some residues of these substances may be left in or on the food at the time of marketing. The amount of the residue is the important thing from the standpoint of safety. Maximum permitted levels have been established under the authority of section 24 of the act which provides for the promulgation of regulations exempting any food, et cetera, from any provision of the act—in this case section 4(a). These maximum permitted levels for pesticide residues are called tolerances, and these have been established for approximately 70 pesticides on a wide variety of foods. Unless a tolerance has been established for a pesticide on a specified crop, the legislation does not permit the sale of the food harvested from that crop if it contains any residue of the pesticide.

The tolerance for any pesticide on any food is only established in the food and drug regulations after a critical study of all pertinent evidence submitted by the manufacturer of the pesticide. You have examples of this information. The procedures now followed in establishing a pesticide tolerance are in accord with those recommended by an expert committee in 1961 under the joint auspices of the world health organization and the food and agriculture organization of the United Nations. Some of you have been referring to this report and I know that you are aware of these methods. These were the recommendations of experts from many countries who are scientifically and medically qualified and are actively engaged in this field of work.

The submission for a pesticide tolerance is in many ways analogous to submissions required for new drugs. The manufacturer must supply information on the physical and chemical properties of the pesticide, he must specify the amount to be applied and the frequency and time of application, and the results of tests to determine the amounts of the residues that remain in or on the food crop. He must also describe in detail the studies and the results of those studies that have been conducted to determine the acute and chronic toxicity of the pesticide including the maximum dose that produces no effect. These tests are carried out on at least two species of animals. Finally, the manufacturer must provide a satisfactory method for the quantitative determination of the residue on the foods for which the pesticide is recommended. All of the information and data in the submission are critically reviewed by scientific personnel of the directorate who give particular attention to the investigations on the toxicity of the pesticide.

The calculation of the permissible intake of a pesticide by man is based particularly on the chronic toxicity studies. The maximum dose level which shown no detectable effect in the most sensitive species of test animal is calculated from these studies. This amount is divided by a safety factor, usually 100, in order to derive the tolerance that will be permitted in human food. The safety factor is designed to provide for any differences that may exist between the experimental animals and man in their susceptibility to poisoning from the pesticide, and is also designed to provide for variations in individual sensitivity, unusual eating habits, as well as the possible synergistic effects of the pesticide with other chemicals in the diet. The tolerance that is finally established also takes into account the proportion of the foods in the diet that may contain residues of the pesticide in question. In addition, if the level calculated as I have described is higher than is necessary for agricultural purposes, a lower level is adopted for the official tolerance.

On completion of the review of a pesticide submission by the directorate, the manufacturer is notified either that (1) no tolerance can be established, (2) no tolerance can be established unless more adequate and complete scientific data can be provided to justify a tolerance, or (3) that the amendment of the regulations has been recommended in order to establish the proposed tolerance. Since 1956, the directorate has received 177 submissions with respect to pesticide residues in food. This number includes those in which official tolerances were recommended any other that were submitted to satisfy the authorities that no residues would remain on foods at the time of marketing when the pesticides were used as recommended. More scientific data and information were requested in the case of 119 of these submissions. In the end, the directorate rejected 26 submissions in their entirety or in part (i.e. tolerances were refused for some of the foods recommended in the submission). The directorate has also reduced the tolerances for 32 pesticides, below that which was requested.

Every possible chronic effect of pesticides on man cannot be predicted even after the most exhaustive studies on experimental animals. This same statement applies, however, to many other substances in our environment such as drugs and even some foods.

Ultimately, nothing can substitute for man's own experience with the components of his environment. Having said this, however, it is also true that any hazard to the public health from pesticides can be eliminated for practical purposes if we properly use the knowledge that we can obtain from toxicity studies on animals. In chronic toxicity experiments, small amounts of pesticide are fed to animals throughout their lifetime, and even through succeeding generations. These studies establish the maximum amounts that the animals can ingest over a lifetime without any effects. They also reveal a great deal about the action of a pesticide on living tissues and organs, and its effects on

growth, reproduction, and on the life span. The results of the chronic toxicity studies on animals are complemented by man's own experience with accidental poisonings, both fatal and non-fatal; there is also a considerable experience with persons exposed to relatively high pesticide levels in manufacturing and formulating plants. These experiences that are reported in the medical literature permit some assessment of the relative sensitivity of man and animals to a particular pesticide. The information on the toxicity of a pesticide, when combined by the expert with knowledge of the consumption of different foods in the diet, permits the informed calculation of safe residue levels in foods. This level is further reduced, however, by the safety factor before establishing a tolerance which gives a very strong assurance that no harm will result to man if he consumes food containing residues within the tolerance throughout his lifetime. There is no direct or convincing evidence of any case of chronic toxicity resulting from pesticide residues in food in this country.

We are very much aware in the food and drug directorate of the onerous responsibility we bear to the public to ensure that the foods that we consume do not contain dangerous concentrations of pesticides or any other poisonous material. We attempt to do this without advocating an extreme course in which no detectable traces of any pesticide would be permitted in foodstuffs; if this course were followed, I understand that the effects upon the agricultural economy and human well-being would be very serious indeed. We do insist, however, on the strongest scientific evidence that a proposed tolerance will provide an adequate margin of safety before permitting any trace of a pesticide in a food sold in Canada.

The CHAIRMAN: Thank you, Dr. Morrell. Is it the wish of the committee that we go on and ask Dr. Morrell questions or should the meeting be now adjourned? We have an open date one week from today, if it is convenient to Dr. Morrell to come back with people from his department after we have had a chance to consider his statement.

Mr. NESBITT: Mr. Chairman, will we get a copy of Dr. Morrell's statement or will it be in the minutes, and if so will we have a copy of the minutes before the next meeting? It would automatically be included in the minutes, I understand.

The CHAIRMAN: Anyone who wishes a copy of last week's evidence No. 3 may have it. It contains a statement from Mr. Hays of the Department of Agriculture. Nos. 1 and 2 will be available tomorrow. I am not sure when today's minutes will be ready. I assume they will be available on Thursday afternoon.

Mr. BASFORD: It would be important because much of the discussion this morning referred to food and drugs.

The CHAIRMAN: I was wondering if it would be possible to get this reproduced. I understand it is. If it is the wish of the committee, we can have Dr. Morrell's statement reproduced and get it around to you before the minutes come out. Is it agreed? Agreed.

Mr. BASFORD: There is just one question I have, Mr. Chairman. We seem to be tying up an awful lot of officials' time in these proceedings.

The CHAIRMAN: Yes. I thought the examination of the Department of Agriculture would be very brief. Our next meeting on Thursday only deals with the Department of Fisheries. A week from today we will only have the food and drug directorate. I thought we were almost finished with the Department of Agriculture and that is why I asked Dr. Morrell to come here this morning. We apologize to him for the lengthiness.

Mr. ROXBURGH: Our good friend Dr. Basford had only a couple of questions

The CHAIRMAN: The meeting is adjourned until 9:30 on Thursday, according to what he said at the last meeting.

APPENDIX "A"

Ottawa, Ontario,
October 15, 1963.

Provincial Legislation for
Control of Use of Pesticides

There would appear to be no provincial laws primarily designed to restrict use of pesticides in Newfoundland, P.E.I., Nova Scotia and New Brunswick. Nova Scotia's Agricultural and Marketing Act requires that certain pests be controlled. New Brunswick has authority under several acts to establish regulations to control use and action has been taken under the Water Act to bring to farmers' attention the danger of polluting streams and ponds with pesticides.

Similarly the Quebec Departments of Agriculture, Forestry, Health, and Game and Fisheries report that they have no special laws or regulations to control use of pesticides. Bylaw No. 1275 of the City of Montreal deals with the use of fumigants for the control of vermin.

The Ontario Water Resources Commission Act (1962) provides that no person shall add any substance to the water for the purpose of killing pests without a permit issued by the Commission. The Ontario Pesticides Act 1956 provides for the licensing and control of pest control operators. Pest control in agriculture (plant and animal production) is exempt. Only licensed pest control operators are permitted to use hydrogen cyanide, methyl bromide, chloropicrin or compound 1080. An individual may treat his own premises with any material except these four. A permit is required for the application of any phosphate insecticide from the air (except malathion and Korlan).

The province of Manitoba recently introduced the Pesticide Control Bill. This bill, effective June 17, 1963, provides that pesticides may be sold to farmers only by dealers who have obtained a provincial license. It provides authority for examination of field crops, livestock and livestock feed supplies to determine if they are contaminated to a degree that may be injurious to the health of people or livestock and, if so, to destroy such supplies. It provides authority for the prohibition of use, where necessary, of any pesticide. The purchasers of aldrin, DDT, dieldrin, endrin or heptachlor are required to sign a declaration or affidavit certifying the intended use and undertaking to use the products according to directions. The province of Manitoba also has regulations under the Public Health Act which deal with fumigations, the issuing of permits for fumigations, the inspection of foods, the disposal of contaminated foods, and associated matters.

We do not have record of any provincial legislation in the province of Saskatchewan to regulate the use of pesticides.

The province of Alberta has a number of Acts which deal with various aspects of the employment of pesticides for the control of pests of agriculture and diseases of livestock but the provisions of these acts do not invade the area of authority covered by the federal Pest Control Products Act. The Alberta Department of Health has considered legislation to control pest control operators, including those engaged in custom spraying in agriculture, but we are not aware that such legislation has been enacted. The Public Health Act provides regulations governing disinfestation by the use of hydrocyanic acid gas, and packaging of mercurial seed treatments. The Province made use of a declaration form which was required to be signed by purchasers of dieldrin for the control of grasshoppers.

In British Columbia the Public Health Act has no provision to regulate the use of fumigants though the City of Vancouver does have such a bylaw. The province has no legislation to control custom spray operators engaged in the

control of agricultural pests or mosquitoes. The Water Rights Act prohibits the placing in any stream of any prohibited substance and this legislation could be interpreted as being applicable to pesticides. The Pharmacy Act provides regulations regarding the sale of agricultural pesticides but these regulations, we believe, are not strictly enforced.

In general, across Canada, provincial acts which regulate the sale of toxic materials tend to exempt any products registered under the Federal Pest Control Products Act.

While time has not permitted an exhaustive review of provincial legislation, the following acts have been scanned:

Nova Scotia:

Agricultural and Marketing Act, Part XII (Plant Diseases, Insects and Pests) and Part XIII (Prevention, Control and Elimination of the Apple Maggot)

New Brunswick:

Natural Products Control Act, Chapter 156
Health Act, Chapter 102
Water Act, Chapter 19
Injurious Insect and Pest Act, Chapter 110
Pharmacy Act

Quebec:

Act Respecting the Protection of Plants, Regul. 3, Control of the Apple Maggot. The regulation provides that two sprays of lead or calcium arsenate must be applied. This regulation is no longer enforced.

Ontario:

Plant Diseases Act. This deals with such subjects as apple maggot certification and control of the pest in apples.
Pharmacy Act. Section 2, b, ii, exempts products registered under the Pest Control Products Act. Products not so registered are subject to the Pharmacy Act.
Water Resources Commission Act. Regulates addition of pesticides to water.
Pesticides Act 1956.
See above. This Act is closely enforced with respect to application of insecticides by professional pest control operators.

Manitoba:

The Pesticide Control Act (see above)
The Public Health Act (see above)

Alberta:

Pharmaceutical Association Act
Section 27 regulates compounding and sale of poisons "except compounds for use in control of plant diseases and of pests and predators of plants and animals".
Public Health Act
Regulates pollution of air and water, production and handling of food, etc.

The Setting of Poison Act.

Deals with the setting of poisons for control of gophers, crows, magpies, coyotes, etc.

The Control of Agricultural Pests Act.

Requires that those who own, occupy or control land shall take active measures to control pests named under the Act.

The Livestock Diseases Act, Livestock Medicine Regulations, control the sale of medicines by any person other than a pharmacist or a veterinarian but grant exemptions to medicines registered under the Proprietary or Patent Medicines Act (Canada) and medicines for external use registered under the Pest Control Products Act (Canada).

Dairymen's Act. Contaminated milk or cream may be confiscated or used other than in the preparation of food.

British Columbia:

Plant Protection Act. Provides for the control of codling moth in abandoned or unsprayed orchards.

Grasshopper Control Act.

Pharmacy Act. The Act regulates the sale of drugs and poisons for agricultural purposes, names those for which the purchaser must sign the Poison Register and those which must be labelled with the poison symbol. As stated above, the Act does not appear to be strictly enforced in regard to pesticides.

Public Health Act. (see above)

Game Act. Prohibits use of poisons in the taking of game or control of predators except by officers of the Game Branch.

Water Rights Act. (see above).

APPENDIX "B"

P-4-18-R1

Revised January 9th, 1961.

DATA RESPECTING TOXIC HAZARD EVALUATION REQUIRED IN
SUPPORT OF APPLICATION FOR REGISTRATION OF
PESTICIDES

The purpose of this request for information is to obtain the data necessary to allow health officials to appraise the hazard of the proposed pesticide to those who may be exposed to it.

The product's proposed use and toxicity will determine how much of the information requested below may be required for the specific registration case.

I Composition

A Composition of Formulations

- (1) Name and proportions of all constituents,
- (2) Physical form and density.

B Description of Pesticidal Ingredients

(1) Chemical

- (a) Chemical Names (use nomenclature of Chemical Abstracts)
- (b) Trade names, common names or synonyms,
- (c) Purity,
- (d) Stability,
- (e) Solubility in water, fats, oils and other solvents,
- (f) Manufacturer.

(2) Physical

- (a) Melting point,
- (b) Vapour pressure,
- (c) Density.

C Other Pertinent Data

II Application

A Application Equipment Recommended.

B Rate and Timing of Application.

III Residues

A Crop Residues

The requirement is for residue data covering each formulation on each crop at the maximum recommended level of use.

Accurate data should cover the time-residue relationship from last application until marketing. It will be necessary to include data on meteorological conditions under which tests have been conducted. If the product is to be used on crops grown in Canada, data should have been taken under Canadian conditions or under conditions closely resembling those found in Canada.

The report must include a statement of methods of chemical and/or biological analyses employed. Such methods should be capable of determining residues with specificity on the crops concerned.

B Animal Residues

If the product is to be recommended for applications in which direct or indirect exposure of animals used for food would occur, then evidence must be presented to indicate the levels of the pesticide and its toxic metabolites at the stage when the food product will be marketed (i.e. carcasses, milk, etc.).

C Other Residues

When application of a pesticide is made in such a way that inert surfaces are contaminated, the levels initially present and the rate of disappearance should be indicated.

IV Acute and Sub-Acute Toxicity

A Data on mammalian toxicity of the grade of toxicant which is proposed for use in manufacturing the pesticide is required. Ideally the toxicant should be 100% pure, but as this is not practically attainable, it is necessary to know how the formulating grade compares with the pure grade.

When more than one toxicant is included or modifying agents are added, the combined effect on the mammalian toxicity should be determined.

- (1) The acute oral LD_{50} should be determined on rats and dogs.
- (2) The acute dermal LD_{50} from a single application to rabbits should be reported. In addition, sub-acute data for three months should be supplied as well as information on skin and eye irritation; also, possible sensitization due to the compounds.
- (3) The acute inhalation toxicity should be determined on rats and dogs and be based on data covering exposures such as would allow the establishment of the mammalian LCT_{50} . The time factor (T) in the formula will be considered to be 30 minutes or less.

NOTE: Based on the information supplied in answer to Items I to IV it may be possible to decide which of the following items will be required.

V Evaluation of Chronic Effects

A The following information should be supplied:

- (1) Growth and weight changes in male and female rats, and at least one other species, at various levels of administration and by oral and respiratory route; in the latter case, the time factor in the expression LCT_{50} should be 8 hours a day, 5 days a week.
- (2) Mortality data.
- (3) Pathological findings.

NOTE: Dosages should be so selected as to produce effects ranging from none to marked. Chronic studies in rats and dogs should continue for at least two years and one year respectively. The maximum tolerated dose for these species, based on body or organ weight changes, mortality, pathological changes and blood chemistry, should be reported.

VI Environmental Health Hazard Data

In order to provide direct evidence of hazard, clinical and environmental studies should be carried out on exposed persons at pilot-manufacture, formulation and field-application stages. Data submitted should include levels of exposure and clinical findings.

VII *Physiological and Biochemical Response*

- A The following data may be required, depending on the need indicated from the foregoing sections. Responses to acute and chronic exposures should be studied but may be confined to the grade of toxicant that will be formulated.
- (1) Physiological responses, including pharmacodynamics such as blood pressure, heart rate, respirations, nerve reflexes, muscle responses, etc. in dogs, rabbits or cats, plus a study of the mechanism of the physiological action may be required.
 - (2) Biochemical responses with emphasis on enzyme changes and blood chemistry, including the mode of action of the compound, and specific evidence with regard to tissue storage in laboratory animals in relation to intake, including evidence of conversion in the body to compounds of different toxicity, may be required.

VIII *Diagnostic Tests*

An outline of diagnostic tests applicable to cases of ill effects from the compound should be provided, when available.

IX *First Aid and Antidotes*

General first aid procedures and specific antidotes, if known, should be supplied.

X *Special Precautionary Techniques*

Methods for dealing with spills and removal of residues from crops should be indicated, if necessary. Special procedures for handlers should be supplied if necessary, including types of respirators, skin creams, protective clothing, etc.

XI *Experimental Procedure*

The procedures used should be based on statistical design. The results of such experiments may be analysed and conclusions drawn from the results may be expressed with the fullest degree of confidence.

- References: 1. *Experimental Designs* by Cochran and Cox, John Wiley & Company, 1950.
2. *Elementary Medical Statistics* D. Mainland, M.D., W. B. Saunders and Company, 1952.

Pesticide Unit,
Plant Products Division,
Canada Department of Agriculture,
Ottawa, Ontario.

WSM/jw

March 19, 1954.

Revised February 2, 1955.

Revised January 9, 1961.

HOUSE OF COMMONS

First Session—Twenty-sixth Parliament

1963

SPECIAL COMMITTEE

ON

FOOD AND DRUGS

Chairman: Mr. HARRY HARLEY

MINUTES OF PROCEEDINGS AND EVIDENCE

No. 5

THURSDAY, OCTOBER 17, 1963

Statement by The Honourable H. J. Robichaud, Minister of Fisheries.

WITNESSES:

Dr. A. W. Needler, Deputy Minister of Fisheries; Dr. A. L. Pritchard, Director, Conservation and Development Service; Mr. G. Anderson, Assistant Director, Inspection Service, both of the department of Fisheries; and Dr. H. Hurtig, Associate Director (Pesticides), Branch Executive of the Research Branch, department of Agriculture.

ROGER DUHAMEL, F.R.S.C.
QUEEN'S PRINTER AND CONTROLLER OF STATIONERY
OTTAWA, 1963

SPECIAL COMMITTEE ON FOOD AND DRUGS

Chairman: Mr. Harry Harley

Vice-Chairman: Mr. Rodger Mitchell

and Messrs.

Armstrong
Asselin (*Richmond-
Wolfe*)
Baldwin
Basford
Cashin
Casselman (*Mrs.*)
Côté (*Longueuil*)

Enns
Fairweather
Francis
Gauthier
Howe (*Hamilton South*)
Macaluso
Marcoux
Nesbitt

Orlikow
Pennell
Roxburgh
Rynard
Valade
Whelan
Willoughby—24

(Quorum—10)

Gabrielle Savard,
Clerk of the Committee.

MINUTES OF PROCEEDINGS

THURSDAY, October 17, 1963.

(5)

The Special Committee on Food and Drugs met at 9.50 a.m. this day. The Chairman, Mr. Harley, presided.

Members present: Messrs. Armstrong, Baldwin, Basford, Harley, Marcoux, Nesbitt, Pennell, Roxburgh, Rynard, Whelan (10).

In attendance: The Honourable H. J. Robichaud, Minister of Fisheries; *from the department of Fisheries:* Dr. A. W. H. Needler, Deputy Minister; Dr. A. L. Pritchard, Director, Conservation and Development Service; Mr. G. Anderson, Assistant Director, Inspection Service; *from the department of Agriculture:* Dr. H. Hurtig, Associate Director (Pesticides), Branch Executive of the Research Branch.

A quorum being present, the Chairman welcomed the Honourable Minister of Fisheries.

Mr. Robichaud read a prepared statement and introduced the officials of his department. The Minister having to leave for a meeting of the Privy Council, the Chairman thanked him for having addressed the Committee, and he retired.

Dr. Needler, Dr. Pritchard, Dr. Hurtig and Mr. Anderson answered the questions of the members covering chiefly the effects on fish of pesticides and industrial pollution of water.

The questioning being concluded, the Chairman thanked the witnesses, and at 11.10 a.m. the meeting adjourned to 9.30 a.m. Tuesday, October 22nd.

Gabrielle Savard,
Clerk of the Committee.



EVIDENCE

THURSDAY, October 17, 1963.

The CHAIRMAN: Gentlemen, we now have a quorum and it is 9:45. I think we should start our meeting. We are very pleased and honoured this morning to have the Minister of Fisheries, Mr. Robichaud, with us, and we would like him to start off with an opening statement.

Hon. HEDARD-J. ROBICHAUD (*Minister of Fisheries*): Mr. Chairman, ladies and gentlemen.

I am grateful to you and your committee for the opportunity of placing before you a general statement of the views of the Department of Fisheries on the use of pesticides.

I have noted in the "terms of reference" quoted by your chairman in his kind letter of invitation, that you are to concern yourselves with "the hazards of food contamination from pesticides and other noxious substances". I have assumed, however, because of your request for a general statement of views, that your committee may wish to consider effects other than those which might occur from the ingestion of the materials under discussion, or from the ingestion of food materials contaminated by them.

May I first be permitted to state some general principles. It must be remembered that fish are cold-blooded aquatic animals. For this reason they react very quickly to any change in the water environment. Any substance which is added to the waters which they inhabit must be assumed to be capable of producing some effect, either beneficial or detrimental. Pesticides have been manufactured, in the main, to kill other cold-blooded animals, insect pests, so it is not surprising that when they find their way into water frequented by fish in sufficient concentration, they will also kill fish. This mortality may be one of our most serious problems in that it will deplete or even eliminate the resource.

From the point of view of the contamination of food, mortality may be a blessing in disguise. All of you are aware of the fact that all fishermen, both commercial and sport, have a definite revulsion against picking up a dead fish and using it for food. They must be sure it is caught when it is alive. In fact, in our quality control program for commercial fish, we discourage methods of operation which will give drowned fish in nets. The result is that we can assume that most of the fish which are seriously contaminated by pesticides will never reach the consumer. While we do not ignore that fact that some may be eaten, our main concern is that we should guard against the unnecessary destruction of food or a food resource.

The Fisheries Act, 1932, stipulates that it is unlawful for anyone to put any substance deleterious to fish in waters frequented by fish or in waters tributary of those frequented by fish. Any substance which is considered deleterious may be designated by order in council. There is a heavy fine for any infraction. There is definite support for strong action. I find, however, that the Department of Fisheries has been reasonable in its approach to enforcement for several good reasons. As indicated above, we have good reason to believe that most of the fish contaminated by pesticides will not find their way into the human food channel—our first consideration. We also know that within limits fish have a definite resilience against a depleting agency. The populations, if slightly reduced, tend to have more successful propagation toward rebuilding

the runs. We also recognize that repeated fines are not the final solution to the problem.

Recognizing that there are other important resources to which the use of water is essential and that there are some which must obviously employ pesticides to obtain a quality product, or indeed any product at all, we approach each problem as objectively as possible on a so-called "multiple resource use basis". We try to find substances which will do their work as pesticides and yet will not harm fish. If this is not possible, we experiment with dosage levels, time of application and so forth, to reduce fish mortality. If all else fails and there is danger to humans or the fish populations, then we feel we have no option but to take action under the law.

It would be wrong to conclude that this attitude precludes consideration of the problem of residues of noxious substances in human food. There is one service in the department which has as its sole purpose to ensure that the fish which is marketed is fit for human consumption and of high quality—the inspection service. This service operates under the Fish Inspection Act and the Meat and Canned Foods Act where authority is available to prevent the marketing of fish for human consumption which are tainted, unwholesome or decomposed.

It is recognized that the basic responsibilities for regulations with regard to human health hazards from contamination with pesticides rest with the Department of National Health and Welfare. We thus have built up and continually maintain the closest liason with that department in these matters. If other departments are concerned in their responsibilities for a particular resource, co-operation with them is also necessary.

I must add that this permanent interdepartmental committee which we have with health and welfare is working very well and very satisfactorily.

I have with me this morning the deputy minister of my department, Dr. Needler, and the director of conservation, Dr. Pritchard, who are prepared to answer any questions you may wish to ask them.

I wish to apologize for not being able to remain with you after 10 o'clock. We have a council meeting followed by a cabinet meeting at 10.30.

We also have here Mr. Henderson of the inspection service, a service which is mainly concerned with the application of regulations which come under the matter which we are discussing this morning. I thank you.

The CHAIRMAN: Thank you very much Mr. Robichaud.

Mr. RYNARD: I would like the minister or Mr. Needler to comment on the statements that some of the bigger fish eat the little fish, the ones they feed on, and it has been found, even in deep sea fishing, that those other fish are really loaded with the pesticide or with whatever is the substance that is being used. They are then completely unfit for consumption as they carry several times the amount of pesticide that is safe for human consumption. I would like him to comment on that if he could.

Dr. A. W. H. NEEDLER (*Deputy Minister, Department of Fisheries*): Mr. Chairman, it is of course true that big fish eat little fish and that little fish eat smaller fish, and that some of these organisms at times do concentrate certain deleterious substances, radioactivity, for example, is one of them. Actually, in all of our examinations of material, we have not found any fish that have, as far as we know, become dangerous from this source. There is only one example, which is an actual one and that produces a poison, and that clams sometimes concentrate this by eating that organism. We have very careful control to prevent clams with a dangerous concentration of this poison from getting on the market. That is the only example I know.

Mr. RYNARD: There was a comment from New York—it was either last year or else last spring, I forget which—that they had to destroy a lot of the deep sea fish because they found out that this pesticide was very high in the bigger fish, much higher than in the little fish.

Mr. NEEDLER: There may be an example there that I do not know of, and the area of the eastern coast of the United States is one of the worst areas for that sort of thing because of the use of D.D.T. in the marshes and so forth.

Mr. RYNARD: I may have that report to give you.

The second thing I would like to ask is in connection with the province of Ontario, and it is more applicable to the areas where we have the lamprey eel. We are using poison for it. Is there any danger to the other fish from the poison that we are using for this eel?

Mr. NEEDLER: Well, the poison that is being used was selected after a great deal of experimentation by the research people working for the international commission on the great lakes, and at the concentrations used I understand it kills lampreys but does not harm the other fish. There is no question of any danger to human beings from this.

Mr. RYNARD: My third question is whether you could comment on the radioaction effect on fish. How much do they pick up and do the levels vary and is it dangerous at any point? Have we found it dangerous in the fish we are catching?

Mr. NEEDLER: Recognizable amounts of radioactivity do occur in fish and they are known to occur in other food substances such as milk and so forth.

We are carrying out a sampling program in cooperation with other departments, and as far as I know there have been no fish on the market in Canada with levels of radioactivity that were even approaching dangerous levels.

Mr. RYNARD: Thank you very much.

Mr. NESBITT: I have just one question. Could Mr. Needler tell us if there are any specific instances—and if so, where they took place—of insecticides having been sprayed on a mass scale, for mosquitoes or spruce budworm or something of that nature, which have actually caused a heavy loss of fish life in either coastal areas or rivers and lakes in Canada.

Mr. NEEDLER: The example that comes to my mind is the use of D.D.T. for spruce budworm, and there is no doubt at all that its use has caused fairly heavy mortality of Atlantic salmon in the Miramichi area, for example. In one case I think it reduced the population of young salmon in certain tributaries of the Miramichi down to a third or less. There is no question of it having killed Atlantic salmon. This is one of the cases where experimentation is going on to discover the safe dosage levels, and this is being done in cooperation with the authorities that are carrying out the spraying.

Mr. NESBITT: Are there any other instances?

Mr. NEEDLER: Dr. Pritchard may have more examples.

Dr. A. L. PRITCHARD (*Director, Conservation and Development Service, Department of Fisheries*): There was a similar instance actually on the west coast where they sprayed with D.D.T. for the black-headed budworm. Fortunately it was a limited spray area and before anything else was done it did kill fish, there is no doubt about that.

There have been other chemicals used for spraying for beetles in log booms. As it was used first, in the way they wanted to use it, this did cause some mortality, but since that time the method and concentration of the spraying has been adjusted so that in fact mortality is limited now.

Mr. NESBITT: This may be outside the field of federal fisheries jurisdiction, but have any reports come to your ears, so to speak, of damage to either

commercial or sport fish in the inland waters, which I suppose are largely under provincial jurisdiction or on the great lakes.

Mr. PRITCHARD: We get reports of specific instances, of mosquito spraying, for example. Recently in British Columbia they sprayed for mosquitoes on some of the beaches in the good salmon rearing areas. There were a lot of fish killed. Incidentally, that was one case where we prosecuted and obtained a conviction. Of course, the fish were dead so the conviction did not help.

We have had other instances where spray has been used and fish have been killed, but usually this is because of lack of co-ordination in planning the program.

Mr. NESBITT: Who would normally use these sprays? Would it be the provincial departments or the companies, or what?

Mr. PRITCHARD: In this case in British Columbia a local air line company did the spraying at the request of the local people. If you mean government in the sense of every level of government, it is usually government which is concerned with mosquito control.

Mr. NESBITT: Local administration?

Mr. PRITCHARD: Local administration, yes. In the logging industry it is the industry itself.

Mr. NESBITT: Do you know of any instances of this nature that have occurred in the province of Ontario?

Mr. PRITCHARD: I heard of mortalities but I have not yet heard whether they were a direct result of the spraying. They reported to us and we reported to them. There was one case, in an area just as you go out of lake St. Clair into lake Huron, of heavy mortality of fish, which somebody attributed to a spraying program.

Mr. NESBITT: I am thinking of that.

Mr. PRITCHARD: We reported it to them and they went in. Unfortunately, the fish involved in that case have a habit of dying in big numbers every now and then, so one would have to be pretty careful in attributing it to something specific.

Mr. NESBITT: As far as you know, there is no really proven instance of a large mortality of fish either in the great lakes or in Ontario waters that has been directly attributed, and proven so, to the use of pesticides?

Mr. PRITCHARD: If you mean large in the sense of total populations of fish, the answer is that I do not know of any case of spraying that would have killed the total population of a whole lake. That has not happened. However, there have been instances where spray has been used and fish have been killed.

Mr. NESBITT: Are the instances of which you know in the great lakes themselves or in waters going into the great lakes, or in some inland unconnected water?

Mr. PRITCHARD: The pesticide they are spraying, you must remember, is affecting the land. I would say they were in the great lakes, the mouths of the rivers, tributaries of the great lakes: it is the great lakes drainage area.

Mr. NESBITT: How many instances would you say offhand, 20 or 100? I do not expect you to know exactly.

Mr. PRITCHARD: Those of which we have been notified have been less than 20 over the last five years. We do not know of them all because the Ontario department of lands and forests has the responsibility for this matter.

Mr. Chairman, I might add something to what Dr. Needler said about the chemical that is used for the control of lampreys for Dr. Rynard's information. I happen to be chairman of the commission at the present time.

I would like to assure you that although I am afraid we did not clear it completely with national health and welfare, we did clear the use of this with the Ontario water resources commission and we have had studies run on the effect of the poison by one of the United States university groups, even to the extent of feeding the concentration to dairy cattle, testing the milk, testing the meat, and even going so far as to test the cheese that was made from it and we have done some work on the wildlife involved.

What Dr. Needler said is substantially true. The difficulty is, of course, that to kill the lampreys the concentration should run between twelve and fifteen parts per million. If it gets above that, it may kill some other fish. While we have pretty accurate gadgets for mixing the waters, we sometimes get a kill of fish. When that happens, of course, we stop. Particularly are we concerned with the rainbow trout, which are very important in the lake Superior area.

Mr. RYNARD: Thank you very much.

Off the record, I understand that this pesticide which is killing the lampreys is meeting with a great deal of success.

Mr. PRITCHARD: There are some differences of opinion, and within two months the accomplishments of the commission are to be reviewed by a committee set up by the signatories. We have fairly good proof now that the spawning runs of lampreys in lake Superior have been reduced by over eighty per cent. At the same time, the lake trout have reacted. We have now many more large trout. As you know, before they were all killed by the time they were twenty inches. Our spawning populations have increased. The availability of the fish has increased and in fact, if we did not have a quota, I think the catch could increase quite substantially. There is a firm quota which keeps it down around a total of 300,000 pounds a year. Therefore we feel that we have had some success.

Mr. NESBITT: I am glad to hear that.

Mr. RYNARD: Thank you very much.

Mr. WHELAN: Some questions have been asked about the contamination of the waters, and I was mainly interested in what Mr. Nesbitt asked. How do you test water? Is it easy to test to find if there are pesticides in the water itself?

Mr. PRITCHARD: Dr. Hurtig will tell you whether it is easy or not. I do not think it is easy. Actually, our main determination is to test the water against the fish and see if it will kill the fish. The actual analysis for the particular chemical is something about which I could not tell you. I do not know whether it is easy or not, but I am given to understand that it is difficult.

Mr. HURTIG: Do you want me to comment?

Mr. WHELAN: Yes.

Mr. HURTIG: It is a very difficult area to work in and it requires special techniques and specialized attention. The problem is very close to the one that food and drugs has. First of all, you are starting off with an unknown. You suspect you have a toxic substance present, but which one is it? This itself is a big area of investigation. Then the amounts involved in water are usually so small compared to what might be found on food as a result of treatment of orchards, that again the difficulty is magnified. It is an extremely difficult area in which to work and it requires specialized equipment and people specially trained.

Mr. WHELAN: Do you have enough equipment and people?

Mr. HURTIG: Water is not one of our responsibilities.

Mr. WHELAN: But for general testing, for example for testing the body of a fish to see whether there is contamination, do you have sufficient?

Mr. HURDIG: That is Dr. Pritchard's area.

Mr. NEEDLER: We never have as many as we would like to have.

Mr. WHELAN: You made a statement with regard to the control of budworm. That was one of the areas which caused the most pollution or contamination of water that fish use. Do we not have someone in Canada now who has developed a technique of controlling budworm with some secret formula—a formula that may not be secret, perhaps—which does not contaminate water?

Mr. PRITCHARD: I do not know of any secret formula, but because of the contamination caused by the use of D.D.T.—which is a general poison, as you know—we first reduced the dosages to the level where the forestry people were still satisfied that they were getting control of the budworm, and we found that this helped the fish very greatly. We obtained much less mortality. Then the forestry people branched off into other chemicals. One of these has recently been tried; it is phosphamidon, which does not belong to the same group of chemicals. We have tested it on fish and found it does very little damage to them. I assume it does very little damage to wildlife also. However, it does the job of controlling the budworm. The difficulty here is what always faces us in these matters, one of cost. Phosphamidon is much more costly than D.D.T. When you have a program such as obtained in New Brunswick, where millions of acres are sprayed, the cost is quite important.

In the case of British Columbia, the cost may not turn out to be so important because the spruce out there is worth so much more. It appears as though D.D.T. will never again be used to control budworm in British Columbia; it looks very much as though either very much reduced dosages of D.D.T. or phosphamidon will be employed. In addition to that, the forestry department has tried biological control, using a bacillus, which they can apply in a spray form. But, at the moment, this has not been demonstrated to be as effective as the others. However, this is the line they are taking. Mr. Whelan, I think what you are referring to is the phosphamidon experiments.

Mr. WHELAN: I understood we have a man, who left fisheries in Europe, working in close association with your department; it is my further understanding that he has developed a technique which will not have the effect of contaminating waters, thereby being of great assistance to the department. This may be a rumour but I obtained this information from an authentic source.

Mr. PRITCHARD: It may be very secret. However, if it is anything different from what I have said, it is so secret that we do not know anything about it.

Mr. WHELAN: As I say, the source from which I obtained this information was a very authentic one.

I have a further question, Mr. Chairman. I would like a comparison made of the damage caused by industrial pollution and that caused by pollution of waters through the use of insecticides in connection with the over-all fish population. Could you advise the members of this committee which is worse?

Mr. NEEDLER: I would think, on the whole, that damage to the fish populations by pesticides was the most serious at the moment.

Mr. WHELAN: Even in the great lakes system?

Mr. NEEDLER: These things are very difficult to compare and, of course, they change. I may say that there has been a recent instance in the great lakes area of some sort of pollution which seems to be reducing the quality of certain types of fish. However, I would think the insecticides programs are probably as dangerous at the moment.

Mr. WHELAN: The insecticide programs?

Mr. NEEDLER: Yes.

Mr. WHELAN: And, that is mainly for controlling mosquitoes.

Mr. NEEDLER: Spruce budworm mainly. However, I think in the long run industrial pollution is probably as great a threat as anything, and the greatest threat of all to certain of our large salmon fisheries, as well as to certain fresh water fish.

Mr. WHELAN: Of course, I am thinking more of the great cesspool which we call lake Erie. I might say at this time that our biologists cannot determine where the pickerel are coming from which they have there at this time. They had disappeared but, as I say, quite a large population appeared again this year. This is confusing ordinary laymen, such as myself, and I wonder what inference technical people draw from it.

Mr. PRITCHARD: Mr. Whelan, I think probably you misunderstood. The biologists expected a fair number of yellow pickerel to show up this year. However, I will agree with you, they do not know the reason for the tremendous increase.

But, Mr. Whelan, when you refer to lake Erie as a cesspool, then you are getting off into another field which I do not think you want to discuss at this time, namely the question of domestic pollution. I think you are confusing this with the fact that lake Erie is getting this detritus from the upper great lakes, and it is being filled up with it. Although it will not make it a cesspool it will change the type of fish in the lake, owing to the lake warming up and so on.

Mr. WHELAN: I think that mainly the stuff which goes into lake Erie has the same effect as some herbicides, namely the disappearance of vegetation upon which some fish live. But, I imagine this happened a long time before herbicides were put in lake Erie.

Mr. PRITCHARD: You are thinking of the phenols which you get on the other side of the lake.

Mr. WHELAN: Yes.

The CHAIRMAN: Have you a question, Mr. Basford?

Mr. BASFORD: Yes. You were speaking of the big fish eating the smaller fish. Also, there was some evidence to the effect that there are some pesticides residues in the high seas. I was wondering what research is being done on the effect of the residues in fish, that is, in connection with fertility and spawning habits and so on.

Mr. PRITCHARD: There has been very little research. One small experiment has been carried out at the University of New Brunswick on small salmon because we were interested in the uptake of D.D.T. and the concentration in the various organs of the body. We do know, from investigation, that it does go into the bodies because, for instance, in this last case we had to prove that there was actually D.D.T. We had to make these analyses and had to prove that there was a greater concentration than one normally would find before the courts would impose a fine. I do believe that Dr. Needler stressed a point which, perhaps, you did not quite get. In Canadian fishes, the fish off our coast, we have not found this concentration anywhere near the level that would affect human health, of course. However, in particular areas in the United States this might be possible. For instance, it is quite obvious that when you take the area of Bikini atoll the fish are going to be radioactive.

Mr. BASFORD: I do appreciate Dr. Needler's point; however, there was no evidence of any danger to humans by reason of these residues in fish in Canadian waters. My question was directed to the effect of these residues on the fish themselves and what research was being done into the effect of these residues on fish. There have been suggestions made that these residues are affecting the fertility of fish and wild life.

Mr. PRITCHARD: Of course, we have run actual experiments in the maritimes at the time this spraying has been going on, and have not noticed any difference. However, there is a contamination at times in the Miramichi area owing to the base metal mine in that area, as a result of which some of the fish dropped back. We now are starting to take these fish and use them to see if this actually affects their spawning. We do not have any indication that the levels of pesticides they have has affected it.

Mr. NEEDLER: The simple answer is we have no cases in which we know that pesticides have affected the fertility of fish stocks. We are doing very little research on it; in fact, hardly any and, in my mind, this does not constitute a fundamental research program.

Mr. PRITCHARD: What you are referring to, I take it, is what happens or what is said to happen in birds. Is that what you are referring to? For instance, are you referring to the fact that woodcock, for instance, with concentrations of D.D.T. turn up in the eggs and so on?

Mr. BASFORD: Yes, that is partly what I am getting at. I am particularly concerned with whether we can determine if these residues are affecting the fertility of the fish and the spawning of them.

The other question I wished to direct was how many prosecutions there have been under the Fisheries Act?

Mr. PRITCHARD: I cannot give you the exact number. As we already have explained, we try to settle these things before we have to have a prosecution. We do try to arrange so that they do not kill fish. But, in the last five years there have been probably three or four prosecutions.

Mr. BASFORD: That is the point I wished to get at. I agree with the minister's statement that when the time for prosecution is at hand the fish already are dead, which does not prove to be a very useful procedure. Would you inform us of the process of consultation beforehand.

Mr. PRITCHARD: When we believe there is going to be spraying we meet with these people and discover what they are going to do. We try to arrange their spray program in a way so they do not kill the fish. This is the common practice in British Columbia, as well as in the east now. It is really an experimental spray program, as far as we are concerned, and when there is an indication they are killing fish, it stops.

Mr. BASFORD: Is there a legal requirement that they consult with you first?

Mr. PRITCHARD: No.

Mr. NEEDLER: I do not think so. In a number of cases similar to this we have had to develop with provincial or other government authorities consultation in advance. An analogous case is the pollution by the pulp mill industry. The engineers who design these pulp mills are very much aware of the problem and they consult our people beforehand. Ten years ago this would not have been the case. It is very necessary to build up this sort of consultation.

Mr. BASFORD: But should there be a legal requirement for consulting with you first?

Mr. NEEDLER: I do think it would be useful. Its effectiveness, of course, would depend on how well it was publicized. In the case of the use of pesticides some of the examples of damage given have been as a direct result of ignorance; people have done things in ignorance of the regulations and in ignorance of the dangers.

This was true of the case that Dr. Pritchard referred to of young salmon being killed last autumn in British Columbia.

Mr. BASFORD: Although the pilot involved in that case was an experienced spray pilot?

Mr. NEEDLER: Yes, but I do not think he understood the danger to the fish, and the people did not consult us. Probably the people who hired him did not know they should consult us. This is the sort of difficulty we have.

Mr. BASFORD: I recall comment in the press at that time—although I may be wrong—that that was the first time someone had been prosecuted for this or the first time that a conviction had been made.

Mr. PRITCHARD: That is not true. We got a conviction against some people in the east for spraying over one of our hatcheries years before that.

Mr. BASFORD: Maybe it was the first time in British Columbia.

Mr. NEEDLER: Yes, it could be the first time in British Columbia.

Mr. BASFORD: To go back then, you would suggest there is maybe a need for a legal requirement that you be consulted before a pesticidal spraying of fish rivers is done?

Mr. NEEDLER: I hesitate to recommend this sort of thing because you get into the problem of definition. A person uses a pesticide on a barnyard which might possibly kill a fish. If you are going to have a law you will have to define the instances to which it applies, and I think it would be a very difficult thing. I would like to give that a lot of thought before I recommended that requirement.

Mr. ROXBURGH: When the minister gave his statement at the beginning he mentioned the inspection of fish before they go to the public. He went on to say that for example commercial fishermen could pick up dead fish, but in the case where fish have died from the results of insecticides or by pollution through industrial waste, is there any way of telling whether those fish have died from an insecticide? Has that inspection only to do with whether the fish is fresh or not?

Mr. G. ANDERSON (*Assistant Director, Inspection Service, Department of Fisheries*): You cannot diagnose it if the fish is dead.

Mr. ROXBURGH: So there is no check at the present time?

Mr. ANDERSON: Fish are so susceptible to poison that the likelihood of their getting into commercial fish is rather remote. I would not expect it.

Mr. ROXBURGH: To come back to the question of fertility, Dr. Needler said that very little was being done in that field, that practically no experiments were being carried out. Do you feel that it should or should not be done or do you feel that there is not much logic to it? If it were actually possible to affect the fertility of fish then perhaps the whole fish population could disappear. Have you thought of carrying out any definite experiments where you would be feeding and dealing with fish in a concentrated area?

Mr. NEEDLER: You are thinking of substances such as D.D.T., I understand. Of course I would agree that it would be desirable to know these things, but I think it would be rather difficult and would require a major research program, and I am not at all sure that, until we see some indication that something like this is happening, it would rate a very high priority.

Mr. ROXBURGH: It would be kind of late then, would it not?

Mr. NEEDLER: Actually, our research resources are always less than enough to satisfy the various demands, and priority comes into it.

Mr. ROXBURGH: When you were speaking a minute ago about the instance of the people not knowing, you brought up a thought. You have your rules regarding this spraying. Do you think that your publicity is sufficient; that in each case where you wish to prosecute and the people say they did not know about it, and legally they did not know, will you be able to prosecute? Do you feel this has been brought before the public sufficiently or do you feel there should be more publicity on that matter? Certainly there are times

when people just hire a plane and spray D.D.T. against mosquitoes on the beach, the area, or whatever it is. Are these pilots who are hired to do that cognizant of the rules and regulations? Is it publicized sufficiently?

Mr. NEEDLER: I think the publicity on this whole subject is very much better now than it was a few years ago, as we all know. I think the people closely associated with fisheries are well aware of the regulations, and I would think that with what has been going on in both the east and the west the people associated with the operation of airplanes to do spraying probably also know it. However, a little bit more publicity is always to the good. Publicity on the effect of pesticides on fish and on the fact that it is against the law would be all to the good.

Mr. ROXBURGH: Where should that program start from, what department is actually responsible for that, would it be health and welfare as a whole?

Mr. NEEDLER: That is debatable. Some of it should be done by fisheries in so far as it affects fish or the application of the Fisheries Act. However, there is also a very broad health field here.

Mr. MARCOUX: If I understood the minister's statement correctly, he said that food inspection was made by the people of the department. What inspection is that? Is that food inspection before consumption or is it only to find out about the condition of the fish before it is processed or canned?

Mr. NEEDLER: Mr. Anderson can give you more details, but the inspection we carry on is mainly the inspection of the product, of the canned, the salted or the packaged fresh fish.

Mr. MARCOUX: In your inspection do you look for the pesticides or poisons in the fish?

Mr. ANDERSON: No.

Mr. MARCOUX: Do you grade the quality of the fish?

Mr. ANDERSON: As far as the inspection side is concerned, we ensure that a poor insecticide program is not carried out in the plant so that the fish may be contaminated at the time of processing. This is the extent of pesticide control.

Mr. MARCOUX: In a report somewhere I saw that owing to this insecticide program the insect population was wiped out in some areas and that this was the reason why some fish did not progress or grow. Does that occur to a large degree?

Mr. NEEDLER: I think there was concern in certain areas that the insect population on which the young fish depend was destroyed, and as a matter of fact this was found to be the case in certain instances. Research was carried out on the recovery of the insect population which was found to be more rapid in certain species of insects than in others. The idea has even been entertained of introducing these aquatic insects again. This was one of the ill-effects of the pesticide, that it can kill the insect on which young trout or small salmon, for example, depend.

Mr. PENNELL: This may not be a fair question, Dr. Needler, but I assume that you might answer it. A number of charges have been laid and relatively small number of prosecutions carried out. Is there any tightening up of regulations which you would like to see that might assist you in fighting the pesticides in the fish industry? I say it is not a fair question and I would not press it.

Mr. NEEDLER: I am not so sure. Do you mean you are referring again to the requirement that we be consulted? I think what we need are contacts to develop prevention so that these budworm control programs are planned after consultation. This is becoming more and more true as time goes on.

In my answer regarding the requirement that we be consulted, I did not really want to suggest that I would be against such a requirement. I just meant we would have to think pretty carefully on how to do this. I think it would be quite well to make it clear that people should or must consult before applying insecticides. We are interested in prevention; we are not interested in prosecution.

Mr. PENNELL: Is it a fair interpretation that thought might be given to looking at the regulations with this in mind?

Mr. NEEDLER: As I say, it would be difficult to define this so that it would not become a nuisance or an unnecessary restriction of freedom.

Mr. BALDWIN: I was wondering if Dr. Needler could tell us if there is a mutual change of ideas or views or information from your counterparts in other countries as to this problem which we have been discussing today.

Mr. NEEDLER: There is some. I do not know that I can say too much about the volume. Do you know, Dr. Pritchard?

Mr. PRITCHARD: On the exchange of literature, and so on, it is almost complete, particularly with the United States. The exchange of views is sporadic unless we have a really serious problem.

Mr. BALDWIN: Could you say definitely whether, from these exchanges or from your research or from your reading of material, this is a problem? I am speaking now of the question of pesticides and insecticides with relation to fisheries. Has this become a problem in any other part of the world?

Mr. NEEDLER: Oh yes, definitely in certain parts of Europe and the United States, and, I presume, in some others also.

Mr. BALDWIN: A problem which has reached a greater degree of danger than the problem in Canada now?

Mr. NEEDLER: I do not believe we would be able to assess that. We regard it as quite a serious danger in Canada. In the case of these budworm programs, for example, there is a high degree of danger, and we are putting forth a great degree of effort in coping with them. That is a danger to fish, not a danger to public health.

Mr. BALDWIN: To go back then, do you know of cases in other parts of the world where there is a danger to public health?

Mr. NEEDLER: I think this is a little bit outside of our field, probably.

Mr. WHELAN: I have one other question. The thing that has me a little bit concerned is whether in your enforcement of the laws you have enough people to check on the people who are using these sprays and these insecticides and pesticides properly, or improperly, I should say?

Mr. PRITCHARD: We have not enough, but I think we have sufficient numbers if they are on the job. We have them pretty well spread in the areas where we have responsibilities, and I think we know of most of the instances.

Mr. WHELAN: What I am thinking of is whether you could say that more fish are killed by improper use of pesticides and insecticides than by sportsmen fishing too many and being fined by the game wardens?

Mr. PRITCHARD: That would be a hard one to answer.

Mr. WHELAN: Why I am saying this is that the Department of Northern Affairs and National Resources have trained 120 Royal Canadian Mounted Policemen to enforce game laws and if one of the hunters should shoot a duck he would be fined \$50 and his gun confiscated. However, if one of the ocean boats which goes through the great lakes dumped oil which killed millions of fish—and last year they killed 20,000 ducks at once—no one fines them at all. They dumped oil in the lake and nothing was done to them.

Mr. NEEDLER: I think we have to admit that the enforcement leaves something to be desired. I would be inclined to believe that it was the legal mechanism or the definition of the responsibility that might be the greatest problem.

Mr. WHELAN: It is easier to get after small sportsmen than anyone else.

Mr. NEEDLER: No. A department such as ours and such as the fish and game departments of various provinces actually employs hundreds of people, as you know, to enforce fisheries regulations of one kind or another. Even at that nobody pretends that the enforcement is perfect.

Mr. WHELAN: The main thing is that you have no specially trained law enforcement groups representing the federal department of game and fisheries to enforce the proper use of insecticides and pesticides.

Mr. NEEDLER: No special group, but in the areas for which we are responsible we have quite an extensive field force and we are then almost certain to discover the important cases of damage. The difficulty lies in the arrangements made beforehand, in the prevention, not in discovering cases where damage has occurred.

Mr. PENNELL: It is easier to prove that some person shot a duck than that the death of a number of fish was due to the use of pesticides.

Mr. NEEDLER: That is one problem. In cases of infraction of laws regarding fishing and hunting possession is evidence. This form of evidence is not available in cases of pollution.

Mr. BASFORD: I would like to go back to the minister's statement in which he said that under the act certain deleterious substances could be outlawed by order in council. Have any been outlawed?

Mr. PRITCHARD: Not up to the moment. The act says that you cannot put in anything deleterious. Now, that means that we still have the right to prove that it is deleterious. If you once state by order in council that, say, D.D.T. is deleterious in a certain concentration, then if anybody puts D.D.T. in he would immediately be in court. The naming of the substances should be very carefully handled. The act is no weaker without their being named. We have a list now over which we are going, but the point is that once you name them it is an infraction.

Mr. BASFORD: Your question of evidence and prosecution has made it a good deal easier.

Mr. PRITCHARD: That is right.

Mr. NEEDLER: You would not have to prove damage.

Mr. BASFORD: But until such time as they are named you would have to prove damage.

Mr. NEEDLER: This is a big problem in all matters of pollution because waste disposal is an expensive business, and one of the ways for waste disposal, which is perfectly all right, is to put substances in sufficiently low concentration into the sea or into the fresh waters. Once you name a substance in this way, this technique for waste disposal could no longer be used, and this could be quite a costly thing. For example, if you named waste from pulp mills, this would immediately cause millions of dollars worth of expense. Therefore, it is more in the public interest to have the law simply require that each case should be considered and damage should be proved. We could cause quite a lot of unnecessary expense by being arbitrary on this.

Mr. BASFORD: I was wondering whether your department, or any other department, carries on either a formal training program or an information service for spray pilots so that they would know what they were doing.

Mr. NEEDLER: We do not. We have had some consultations with people who are operating such services, but we have not carried on any courses.

Mr. BASFORD: Do you know of any regulations by the air transport board or by the Department of Transport concerning the licensing of these spray operators so as to assure they have some knowledge of what they are doing?

Mr. PRITCHARD: They have to have a special licence, but this licence merely applies to the safety of the plane and the equipment on it, the ability to carry the equipment. It does not stipulate any conditions of spraying.

Mr. BASFORD: Am I correct in assuming that there are right ways and wrong ways to spray so as to cut down the damage on, say, a spawning area?

Mr. PRITCHARD: In the case of the spraying of forests the federal department, in co-operation with the provincial departments, ask for a certain type of equipment that will give a certain number of drops of a certain chemical per square centimeter. They try to do that, and they also try to set up their operating schedules so that they do not overlap. However, that is not a licensing requirement. This is done by the agency that is doing the spraying.

Mr. BASFORD: Has there been any indication of damage to fish from pesticides or residues in ground water apart from spraying?

Mr. NEEDLER: I do not know of any such instances.

Mr. PRITCHARD: Such instances have been sporadic. For instance, we have had a heavy kill of fish from the use of Paris green on potatoes. It depends to a large extent on what is the condition of the water. If you have a rain storm just after the spray, it gets into the water. However, these are usually local.

Mr. NEEDLER: Your question concerned ground water.

Mr. BASFORD: Yes, but it applies to surface water as well.

Mr. PRITCHARD: These are usually sporadic and incidental.

Mr. RYNARD: Following up Dr. Marcoux's question, I would like to ask the following question. As far as fisheries are concerned, I take it that you are considering the quality of the fish that are being sold. I also take it that you must have testing stations, or you must send certain fish to those testing stations that are operated under the department of health and welfare. Am I assuming too much or is that correct?

Mr. ANDERSON: We have our own fish inspection laboratories stationed across Canada.

Mr. RYNARD: Then you are not making any tests in your sale of fish? As Dr. Marcoux stated, the minister said that the criterion was the quality of the fish and not the insecticide that may be in it. Therefore, they can have no real test in Canada on any fish that are put into cans other than the test of quality?

Mr. ANDERSON: The tests we do at our laboratories are for chemical decomposition and bacterial contamination as opposed to traces of extraneous substances.

Mr. RYNARD: Then that will not take out any D.D.T. or any other insecticide that might be in the fish?

Mr. ANDERSON: No.

Mr. RYNARD: Then we are not carrying out an effective test.

Mr. ANDERSON: At the plant level we try to prevent contamination by insecticides by controlling the plant that way. This is the business of prevention rather than the cure.

Mr. RYNARD: But we do not know that by analysis?

Mr. ANDERSON: No.

Mr. NESBITT: I have one further question. I suppose it will partially answer itself. Is there any danger of which you know from a build-up or concentration of insecticides in any of our waters which would apply more particularly to the great lakes and other inland waters of Canada at least at the present time? I suppose it is fairly evident that the constant change in the flow of waters would, to a large degree, prevent a continuous build-up of residues of these insecticides, but has that matter been considered and looked into?

Mr. NEEDLER: I do not think we have done any research on this. The matter of accumulation of D.D.T. in certain waters has received study in the United States, and there certainly is concern. It would be better to use pesticides which were unstable and would break down faster than D.D.T. of course.

Mr. NESBITT: I would suppose this would depend on certain waters where there is no great change of water, no inflow and outflow as there is in some of our major bodies of water.

Mr. NEEDLER: The instances where studies were carried on were in inlets and tidal marshes, and this sort of place in the United States.

Mr. NESBITT: When you get a considerable interchange of water, a movement of water, do you still yet residue build-up?

Mr. NEEDLER: There is still a tendency to accumulate.

Mr. NESBITT: Why would that be? Are these substances heavier than water or do they accumulate around substances at the bottom?

Mr. NEEDLER: I am not sure myself. I do not know whether these are bound to the organic substances that stay there. Maybe Dr. Hurtig could give an opinion on that. In the tidal marshes and in the inlets of course the exchange is, as you say, pretty big, but in any one tidal cycle there is not a complete flushing.

Mr. NESBITT: Has there been no research of that in Canada?

Mr. NEEDLER: No.

Mr. ROXBURGH: I would like to come back to the industrial waste of our industries. Hundreds of thousands of people are using the water so that we ought to realize it is pretty hard to control but industrial use is concentrated and the different industries have different wastes. You spoke about the amount that is safe to use. Do the rules and regulations at the present time control completely the amounts used by industries and is the waste controlled before it goes out? Is there a hundred per cent check on that and are there any rules and regulations that will prevent any industry from putting into the water waste that will be detrimental to the fish and to the population?

Mr. NEEDLER: As far as we are concerned there are only general provisions of the Fisheries Act which stipulate that you must not put deleterious substances in the water. The answer to your question is no, the control is not 100 per cent. This is one of the big problems which is being met in different ways in different places.

Mr. ROXBURGH: Do you not think then, doctor as you said yourself awhile ago, at the present time fungicide is the reason for death in fish but the other insecticides such as industrial waste could possibly do more damage? It is very difficult for one to go out and spray his garden and to have control over this sort of thing, or in the case of a housewife spraying in the house or the small farmer on his own land; but should there not be rules and regulations in the case of every industry? Would that not be practical? I cannot see that it could be anything else but practical that before an industry starts off we should have a knowledge of the results of the residues therefrom to the fish and wild

game population. In your opinion, should not rules and regulations be put into effect that before any industry ever starts up they should have to prove that the amount of these chemicals going into the water is not going to do any damage?

Mr. NEEDLER: This is the same question we discussed earlier. I agree, if this could be required of them, that there should be prior consultation before any industry disposes of waste. I think it would be a good thing.

Mr. ROXBURGH: Then should the government bring in rules and regulations along those lines, or would that come under the health department?

Mr. NEEDLER: I have not considered the legal ramifications of this or who would be involved. I do know that local governments are very much concerned with pollution problems.

The CHAIRMAN: Have you a question, Mr. Pennell?

Mr. PENNELL: Yes. In connection with the point raised by Mr. Nesbitt, am I correct when I say there have been no tests to determine if there is a greater concentration in lake Erie than in lake Ontario owing to pesticides and things of that nature.

Mr. PRITCHARD: There are none that I know of.

Mr. PENNELL: We have heard lake Erie being referred to as cesspool as compared to the other lakes. Am I correct in saying there is no scientific data available in this respect and there has been no research done by the department to confirm or deny that statement?

Mr. ROXBURGH: That was Mr. Whelan's suggestion in the first place.

Mr. NESBITT: Lake Ontario is probably worse because it collects everything from all the others.

Mr. NEEDLER: This is not primarily the department's responsibility. I would expect the Ontario government would be involved in this. Dr. Pritchard, of course, is the chairman of the great lakes fisheries commission; has that commission looked at the pollution problem, Dr. Pritchard?

Mr. PRITCHARD: No, but we do know there is quite a difference in the pollutants. I lived in the day when we had lots of fish on Burlington beach, but we do not now. It is necessary that one looks at the population of these centres and what has gone on beforehand before one starts blaming insecticides and pesticides wholly for this problem. You are familiar with the situation as it pertains to Toronto and Hamilton.

Mr. WHELAN: Mr. Chairman, I can give Mr. Pennell lots of evidence as a result of research in lake Erie, if he desires. This information did not come from Ottawa but from other parts of the country.

My next question requires only a yes or a no answer, Mr. Chairman. Is it more difficult to enforce the law in respect of the improper use of insecticides and pesticides as it affects larva and, in turn, kills many fish than if I went out and caught an undersized fish out of season.

Mr. NEEDLER: No.

Mr. PRITCHARD: No, it is not more difficult.

Mr. WHELAN: But they just do not do it.

Mr. NEEDLER: They do not keep you maybe from killing undersized fish. Is that the question?

Mr. RYNARD: The problem which Mr. Roxburgh mentioned, as well as a great number more come under the jurisdiction of the province of Ontario, and under the water resources commission of the province of Ontario. If a factory is starting up they are checked by officials of the water resources

commission of the province before they start. Also, it is the duty of the county health unit or the medical officer of health to check on the water in the lakes. I do think that perhaps you were belabouring the point. I do not think that Dr. Needler and these other gentlemen come into this end of it, as they have not the authority to do so.

Mr. BASFORD: Over what bodies of water do you have jurisdiction?

Mr. NEEDLER: The Fisheries Act applies to all waters in Canada. The responsibility for administering the act is delegated to the provinces in various degrees. As far as the fresh waters are concerned, it is delegated to all the provinces except in the maritimes; in regard to salt water it is delegated only to the province of Quebec. But, the act applies to all waters.

Mr. ROXBURGH: In respect of what Dr. Rynard said may I say that we here are talking on a national basis rather than on a provincial basis. It may be that the province of Ontario is very well controlled; whereas another province close by is not, with the result that their industries do the damage in any event. I do realize though that what you have said is quite right.

Mr. NEEDLER: It seems to me this is a field which, at the moment, is in a state of flux. In a number of provinces recently there have been new bodies set up to control pollution and the use of water resources. It may be that the best control of industrial pollution would be more effective on a local rather than on a national basis. However, it will be our responsibility to be in touch with these local authorities in so far as the effects of pollution on fish are concerned.

The CHAIRMAN: Are there any further questions?

Mr. WHELAN: Do you have a fisheries research laboratory in London, Ontario?

Mr. NEEDLER: The fisheries research board has a biological laboratory there, yes.

Mr. WHELAN: That is, in London?

Mr. NEEDLER: Yes.

Mr. WHELAN: It has been said that the federal government as well as the Ontario water resources commission, together with the local health authorities, have a great deal of control. But is there not an international joint committee on pollution in the great lakes, and do they not work with your department from time to time?

Mr. NEEDLER: Yes.

Mr. PRITCHARD: At the moment it covers the tributary waters up farther; they have no reference on the lower areas yet. Their references are specific.

The CHAIRMAN: If there are no further questions I would like to remind the members of the subcommittee—and it looks as though Dr. Rynard is the only one present—of the meeting to be held in room 238-S after orders of the day today to discuss the future agenda.

At this time I would like to thank the gentlemen who came today with the minister, Mr. Needler, Mr. Pritchard and Mr. Anderson.

The meeting will adjourn until October 22, at which time witnesses will be present from the food and drug directorate.

HOUSE OF COMMONS

First Session—Twenty-sixth Parliament

1963

SPECIAL COMMITTEE

ON

FOOD AND DRUGS

Chairman: Mr. HARRY HARLEY

MINUTES OF PROCEEDINGS AND EVIDENCE

No. 6

TUESDAY, OCTOBER 22, 1963

WITNESSES:

Dr. G. D. W. Cameron, Deputy Minister of National Health; Dr. C. A. Morrell, Director of the Food and Drug Directorate; Dr. R. A. Chapman, Assistant Director, Scientific Services, Food and Drug Directorate; Dr. R. Graham, Toxicologist, Food and Drug Directorate; Dr. T. H. Patterson, Chief of Occupational Health Division, all of the Department of National Health and Welfare. Mr. C. H. Jefferson, Chief, Fertilizer and Pesticide Section, Plant Products Division, Production and Marketing Branch; Dr. H. Hurtig, Associate Director (Pesticides), Branch Executive, Research Branch, both of the Department of Agriculture.

ROGER DUHAMEL, F.R.S.C.

QUEEN'S PRINTER AND CONTROLLER OF STATIONERY
OTTAWA, 1963

SPECIAL COMMITTEE ON FOOD AND DRUGS

Chairman: Mr. Harry Harley

Vice-Chairman: Mr. Rodger Mitchell

and Messrs.

Armstrong
Asselin (*Richmond-
Wolfe*)
Baldwin
Basford
Cashin
Casselman (Mrs.)
Côté (*Longueuil*)

Enns
Fairweather
Francis
Gauthier
Howe (*Hamilton South*)
Macaluso
Marcoux
Nesbitt

Orlikow
Pennell
Roxburgh
Rynard
Valade
Whelan
Willoughby—24

(Quorum—10)

Gabrielle Savard,
Clerk of the Committee.

CORRECTION (English copy only)

PROCEEDINGS NO. 1—Thursday, August 1, 1963.

In the Minutes of Proceedings

Page v—the first line of the third last paragraph should read:

“Resolved,—That pursuant to its order of reference, the proceedings and”...

MINUTES OF PROCEEDINGS

TUESDAY, October 22, 1963.

(6)

The Special Committee on Food and Drugs met today at 9.45 a.m. The Chairman, Mr. Harry C. Harley, presiding.

Members present:—Messrs. Armstrong, Asselin (*Richmond-Wolfe*), Basford, Cashin, Côté (*Longueuil*), Harley, Howe (*Hamilton South*), Marcoux, Mitchell, Nesbitt, Roxburgh, Rynard, Whelan, Willoughby (14).

In attendance: From the Department of National Health and Welfare: Dr. G. D. W. Cameron, Deputy Minister of National Health; Dr. C. A. Morrell, Director of the Food and Drug Directorate; Dr. R. A. Chapman, Assistant Director, Scientific Services, Food and Drug Directorate; Dr. R. Graham, Toxicologist, Food and Drug Directorate; Dr. T. H. Patterson, Chief of Occupational Health Division. From the Department of Agriculture: Mr. C. H. Jefferson, Chief Fertilizer and Pesticide Section, Plant Products Division, Production and Marketing Branch; Dr. H. Hurtig, Associate Director (Pesticides), Branch Executive, Research Branch.

The Chairman opened the meeting and introduced the officials of the Food and Drug Directorate.

Dr. Morrell was questioned about the work of the Food and Drug Directorate, its jurisdiction and responsibility. He also answered questions about the toxicity of pesticides and new drugs, and the distribution of information regarding antidotes. He was assisted by Dr. Chapman and Dr. Graham.

Dr. Cameron explained the operation of the poison control centre program in Canada.

A document prepared by the Food and Drug Directorate and entitled "Biological data required for food additives, pesticides, veterinary drugs and additives to animal feed" was distributed to the members present and, on motion of Mr. Basford, seconded by Mr. Asselin, it was agreed that the above-mentioned document be printed as an appendix to this day's proceedings. (*See Appendix hereto*).

Dr. Patterson, Chief of the division of Occupational Health, was called. He read a statement dealing with the hazards of the workmen handling pesticides. He was questioned about the legislation with respect to labelling of agricultural chemicals and on the long-term effects of their use. Dr. Hurtig also supplied information.

Dr. Cameron gave some explanations about the health grants program in this field of research.

Dr. Graham was further questioned.

Mr. Jefferson commented on the responsibility in the administration of the Pesticide Control Act.

The questioning being concluded, the Chairman thanked the witnesses, and at 12.15 p.m. the Committee adjourned to 9.30 a.m. Thursday, October 24th.

Gabrielle Savard,
Clerk of the Committee.

EVIDENCE

TUESDAY, October 22, 1963.

The CHAIRMAN: Gentlemen, we now have a quorum, and I call the meeting to order. This morning we have with us the food and drug directorate. The director of the food and drug directorate, Dr. Morrell, made a statement to the committee at the last meeting. So we shall open our meeting today with any questions you may wish to ask of Dr. Morrell concerning his work and that of the food and drug directorate. Dr. Pugsley and Dr. Chapman are with Dr. Morrell here at the front of the room.

Mr. BASFORD: Mr. Chairman, I would like to examine for a moment the poison control centres which I believe are run by your department, Dr. Morrell. I was referred to you in earlier examinations, by earlier witnesses.

Dr. C. A. MORRELL (*Director of the Food and Drug Directorate, Department of National Health and Welfare*): We do not run the poison control centres in food and drug. What we do in food and drug is to supply the poison control centres in the various provinces with information about the position in terms of toxic substances, and the various household products. We also provide them with a cross index as to useful methods by which to treat the poison in the substance, that is, the poison that happens to be in the product. But we really do not run them ourselves. I think they are run by the provinces. Dr. Cameron could speak to this better than I. I believe they are run by the hospitals and the health departments in the provinces.

Mr. BASFORD: Is there a poison control centre in each province?

Mr. MORRELL: There is at least one, yes, and in some provinces, there are many.

Mr. BASFORD: I am not a doctor. Is this a problem to the medical profession? I mean poisoning either accidentally or in attempted suicide? And with pesticides, would the medical profession generally know how to deal with that kind of accident?

Mr. MORRELL: I suppose that some of them would be unfamiliar with the symptoms of poisoning. There have been a number of cases. Somebody gave me a figure this morning. Perhaps Dr. Graham might say a word as to that.

Dr. R. C. B. GRAHAM (*Pharmacology and Toxicology Section, Food and Drug Directorate, Department of National Health and Welfare*): I have a few figures which I gathered from the poison control centres. They cover 1960 to the present. These are deaths reported to have come about from pesticides.

In 1960 there were two deaths; in 1961 there was one death; in 1962 none were reported; while in 1963 to date there have been four deaths reported to poison control. There may be some, especially of older people and adults which are not reported to them. But this is all they have in their records from 1960 to the present time.

Mr. BASFORD: Why is there a marked increase in 1963, percentagewise?

Mr. GRAHAM: I must admit it is double, with two more cases, but there are only two more cases. And in respect to the 1963 cases, there was one child who ate some lindane tablets; and there was a case of a person in an institution in British Columbia who was spraying with some unknown weed killer, and he died from the effects of it; and there was this case mentioned previously,

in Hamilton, where a gentleman opened a bottle of nicotine with his teeth, and died from it. And one of the best documented cases was from Vancouver, that of a girl, a daughter of a doctor, who swallowed part of a bottle of Malathion. Great efforts were made to save her life through antidotes, but she died after five or six days in spite of all that was done. I think these were all caused from eating or consuming pesticides either accidentally or otherwise.

Mr. BASFORD: What facilities are available to keep the medical profession up to date as to antidotes.

Mr. MORRELL: Some of the poison control centres at least have I think a few cards from us on treatment, but a good deal of this comes from the industry itself. Am I correct in that, Dr. Graham—that we do not have antidotes for all of them in our card system?

Mr. GRAHAM: That is right. For many of the pesticides there are no specific antidotes. There are for a few of the organo phosphates, but for some of the other poisons, no.

The CHAIRMAN: Now, Dr. Rynard.

Mr. RYNARD: I would like to pursue that question a little further. Mr. Graham said there were four deaths. I think the reason for that figure is that they are not properly recorded.

Mr. GRAHAM: There quite possibly are other deaths which are not reported to poison control; but we have no record of these. I checked with the dominion bureau of statistics to see whether they could give me any information from the coroners' reports. They list them by individual substances, but they were unable to tell me about pesticides in general.

Mr. RYNARD: I think the other point is that we have been given no indication of the morbidity as a result of partial poisoning which is not fatal.

Mr. GRAHAM: I have some figures in respect of ingestions of pesticides reported to poison control in 1960. The way this is classified is as follows: pesticides (unspecified), 22 ingestions; garden insecticides, 131; household insecticides, 230; rodenticides, 116; fertilizers, 33; weed killer, 27; another classification called other pesticides, 20.

Mr. RYNARD: In other words, in over 500 cases there would be a certain morbidity.

Mr. GRAHAM: In many of these cases the person goes into hospital. For instance, if a child has swallowed part of the contents of a bottle, the stomach is pumped out, and the patient is observed; in many instances they have not swallowed any appreciable amount at all.

Mr. RYNARD: A good many of the cases which have this morbidity may continue on and actually die from some reaction which has been created by the poisoning. I think the problem is a little greater than appears by cold statistics. I have seen many persons sick from spraying. They are recovered in a few days, but we do not know whether there are any toxic effects to the organs. I think it would be greater than we see.

Mr. GRAHAM: This would be true in the field of chlorinated hydrocarbons. In the case of organophosphates, if you recover from the poisoning it is 100 per cent recovery.

Mr. RYNARD: I wonder if any attempt has been made to have the hospitals notified as to what antidotes should be used and what should be done when a poison has been taken. Do you make grants in this regard, or do you have an interest in this federally? Are there any precautions taken to see that the hospitals have posted in their emergency room the name of the drug and the antidote?

Mr. GRAHAM: I cannot answer that as I am not directly connected with poison control.

Mr. RYNARD: I think this is one of the very weak areas. I could give you an example of this. A few years ago I had a case and no one knew what to do. We telephoned the Sick Children's hospital and it took them about half an hour to get word back to us as to what to do for the child. It is true that we pumped out the stomach and the child recovered, but it left us sitting on a hot spot. If we had had a pamphlet there with instructions printed on it, it would have been a great help. I suggest that we should either do this or see that the provincial government does it.

Dr. G. D. W. CAMERON (*Deputy Minister, Department of National Health and Welfare*): Mr. Chairman, I would like to put this into perspective for the committee. The food and drug directorate did a great deal to launch the poison control centre program in Canada, our principal contribution being the distribution of several thousand cards containing details of household chemicals for the guidance and information of the people who would be in charge of the poison control centres across the country. We then consulted with the provincial authorities who undertook to see that in each province there would be designated centres. The responsibility for maintaining a centre, for staffing it, and for having someone available around the clock seven days a week rests with the centre. We have done the best we can; not so much as we think possibly should be done, but the best we can, with the resources we have, to keep them informed about these chemicals, and any information we can glean from the manufacturers and other sources as to treatment. We feel, however, that the actual operation of centres is the responsibility of the hospital and the provincial authorities. I wanted to make that point.

Mr. RYNARD: In effect then, it would be the responsibility of the province and not our responsibility here.

Mr. CAMERON: It is a co-operative responsibility. We expect the provinces to organize the plan in their province, and we will give all the assistance we possibly can to strengthen their information.

Mr. RYNARD: So far as I know, some hospitals are slipping up on this duty, because I do not think they have those lists.

Mr. ASSELIN (*Richmond-Wolfe*): I can vouch for that in view of what happened to my little boy a few years ago. He swallowed a relatively new drug. We took him to hospital and while pumping his stomach they searched for about an hour or an hour and a half in an endeavour to find out the antidote for this. I can assure you that up until that time we were quite worried about it.

An hon. MEMBER: Where was that?

Mr. ASSELIN (*Richmond-Wolfe*): In the eastern townships, the St. Vincent de Paul hospital. I went through this and I realize the seriousness of it all.

The CHAIRMAN: Could I ask a clarifying question. You said that the cards had been prepared by the food and drug directorate and given to the provinces but that they would not go to each hospital.

Mr. CAMERON: I think this is a very important point. I do believe you would recognize that attempting to supply cards to every hospital would defeat the real purpose of this. I think it is highly desirable—and I am sticking my neck out a bit on this—that a properly staffed poison control centre should be established in main centres. I feel that in the smaller hospitals it is better for the patient and everyone concerned to use the telephone rather than attempt to maintain the full card system. I do not think that familiarity with the cards in every hospital is practical.

Mr. ASSELIN (*Richmond-Wolfe*): But this was a big hospital; it was St. Vincent de Paul general hospital. They had a card system there which they tried to follow, and they did not have it. As I said before, it was a relatively new drug. I would like to know when these new drugs are brought out how fast the hospitals know what the antidote is.

Mr. MORRELL: Mr. Chairman, there certainly may be a lack in supplying information about a new drug. There are new regulations now with respect to new drugs. We demand from the manufacturer information prior to his submitting that drug for clinical trial. We require whatever information he has about an antidote for the drug. This is now a requirement of our regulations.

Mr. ASSELIN (*Richmond-Wolfe*): Does it also require that they print that on the container, the box or bottle?

Mr. MORRELL: No, that would not be the case. But, we visualize this information as being valuable to the clinician who is going to try the new drug, and if he knows something about treating overdoses it will be a very useful thing. As I said, this is new in so far as our new drug regulations are concerned. Of course, this information then will be available to us early on, which will put us in the position to supply poison control centres with the information we get from the manufacturer.

Mr. RYNARD: I think there is one further question in connection with this problem in respect of the poison centres which Dr. Cameron has brought up. I agree with him that is a splendid way of handling it because they can get a terrific amount of information on the new drugs, pesticides and so on. But, in bringing this about you would have to be open all day; you would have to make that available 24 hours a day. Our problem is that when they set up these centres there is no one we can reach by telephone after five o'clock. If you are going to run that type of centre the information would have to be available around the clock or it would be of no use.

The second point I would like to bring up is this; in the common ordinary poisonings which you are going to run into in most areas surely there could be a printed card sent out. If we are going to continue to make grants to the hospitals I think we do have some responsibility to see that these hospitals are properly set up because they are not eligible for the grant until the provincial authority has okayed the building. It must be constructed in accordance with the architect's plans. So, in my opinion, we should say that insecticides and all these things being used more and more are an important facet of our life and provisions for dealing with them must be part of your emergency set-up or you do not get the grant.

Mr. COTE: Mr. Chairman, I should just like to know whether there are any drugs or pesticides on the market for which there are no antidotes?

Mr. MORRELL: I think Dr. Graham has said that there are some in existence for which the treatment would be just pumping of the stomach and getting rid of the substance in that way along with symptomatic support therapy.

The CHAIRMAN: Are there any other questions along this line? I think Mr. Nesbitt wishes to change the subject.

Mr. WHELAN: Mr. Chairman, I should just like to state that in the city of Windsor there is a poison centre and all the municipalities and police departments in the county have the telephone number of that control centre which is in operation 24 hours a day. The establishment of this poison centre was one of the best things that happened in that area. It is located in the Hotel Dieu in Windsor. Windsor is not a big city, its population being approximately 120,000, but because of the organization in respect of this poison centre, service is provided to the whole county, or something in the neighbourhood of 250,000 people.

Mr. BASFORD: Mr. Chairman, last week I suggested the possibility of establishing an index of pesticides showing the chemical content with a cross reference in respect of trade names. Would such an index be useful in so far as poison control is concerned?

Mr. MORRELL: Yes, I think it would be very useful, sir.

Mr. BASFORD: Would an index of this type be desirable from your point of view?

Mr. MORRELL: We have a record of all pesticides in respect of which residues are found in foods, as well as a record of all pesticides in respect of which requests have been made for the establishment of tolerances. There are many others that we do not have a record of because tolerances have not been requested, or in respect of which there is not much likelihood that we will receive a request for a tolerance.

Mr. BASFORD: Is there a problem in existence in respect of household bug killers, for example, which are labelled with a trade name, although the medical profession would have no idea what it contains?

Mr. MORRELL: I am sure the Pest Control Products Act would require some kind of labelling on the container indicating to a purchaser, consumer or doctor the contents. Am I right in that suggestion, Dr. Hurtig?

Dr. H. HURTIG (*Associate Director (Pesticides), Branch Executive of the Research Branch, Department of Agriculture*): The active ingredient must be stated on the label.

Mr. ASSELIN (*Richmond-Wolfe*): Does the act require that everything contained in the pesticide be indicated on the container?

Mr. HURTIG: No, only that the active ingredient be listed.

Mr. MITCHELL: Mr. Chairman, I was going to ask a question on exactly that same subject. I understand that the chemical name of the ingredient must be on the label and in this case this would be the most important item as far as poisoning is concerned, but is there no suggestion on the label as to the antidote which would be the most easily available and most effective?

Mr. MORRELL: I am not sure whether the antidote is required to be put on the label.

Mr. HURTIG: No, it is not required to be on the label.

Mr. BASFORD: Sometimes there is a rather loose description regarding proper first aid.

Mr. MORRELL: Yes, and first aid is about all one can do in this regard.

Mr. NESBITT: Mr. Chairman, I would suggest that this subject is slightly confusing to the laymen as a result of what appears to be a certain amount of overlapping between the various branches of the federal government, such as the Department of Agriculture, the food and drugs division and the Department of Fisheries, and certain provincial authorities. I understand your responsibility in this regard is to make sure that these various insecticides and pesticides are labelled, indicating what they have been proved to do, as well as their composition; is that correct?

Mr. MORRELL: The Food and Drugs Act does not cover these substances because it is not considered that these things are foods. They may be subject to certain regulations when used in the proximity of or on foods. Our interest is in regard to foods alone. A household product such as Raid and the labelling of that product is not our concern, because it is not a food or drug in the sense that the Food and Drugs Act defines food and drugs.

Mr. NESBITT: Would the fact that some type of insecticide was used in the proximity of a food bring that substance within the jurisdiction of your branch?

Mr. MORRELL: If the substance was used where food was being processed or manufactured, such as in a manufacturing plant, it would then fall within the definition of a drug and be considered within the jurisdiction of our division.

Mr. NESBITT: That would not happen in respect of a household product being used in an area where food was being consumed or prepared?

Mr. MORRELL: No.

Mr. NESBITT: Inasmuch as your jurisdiction does apply to food being processed or manufactured, does your jurisdiction not also extend to the production of food, such as grains?

Mr. MORRELL: If a pesticide is used on food in the field by a farmer and there is a residue left on the food when it goes to market or to the householder, we are greatly concerned because that is then an application of a pesticide or insecticide to food. As an indication of our interest in respect of the control of foods of the kind you mentioned, I would point out that we have established tolerances in this regard under the Food and Drugs Act.

Mr. NESBITT: The research which you do and the information which you distribute deals mainly, I understand, with long range effects of drugs and residues on foods pertaining to relatively small quantities consumed at one time, am I correct in that understanding?

Mr. MORRELL: That is a true statement. Our interest, because of the nature of the problem, is in respect of the chronic toxicity involved, although we are interested, of course, in acute toxicity if on a rare occasion, and I do not think this has ever happened, there was a heavy amount of pesticide on food which could produce acute symptoms. Mainly we are interested in chronic or long range consumption of very small quantities of pesticides in foods.

Mr. NESBITT: As an example of this situation I presume one could look to the arsenic compounds used for spraying certain green vegetables?

Mr. MORRELL: Yes, that is correct.

Mr. NESBITT: I suppose your division would not be particularly interested in the labelling of a product such as Raid, which is normally used for spraying flies and mosquitoes, because normally such a product would not be used in a plant which processes food, except on rare occasions; is that correct?

Mr. MORRELL: Raid, of course, is a trade name and it may consist of at least one or two pesticides. The labelling and composition of those products are controlled by the Pest Control Products Act administered by the Department of Agriculture.

Mr. NESBITT: None of those things are of direct concern to you except where residue sprayed on vegetables in the field is concerned?

Mr. MORRELL: In that case we do have an interest, if a residue is left.

Mr. NESBITT: Or used in plants where food has been processed?

Mr. MORRELL: Yes, we have an interest then.

Mr. NESBITT: Then it would appear that perhaps the antidotes are not a direct responsibility of your division?

Mr. MORRELL: No, we have no authority, under the Food and Drugs Act, to control the labelling of any pesticide whether it is in a household package or in large containers for the farmer's use in the fields and on his products. We have no authority over the labelling of those products. Our authority comes into effect when the food is put on the market.

Mr. NESBITT: Under normal circumstances your department would probably not be too concerned then with antidotes for any of these commercial preparations if someone swallowed them accidentally?

Mr. MORRELL: No.

Mr. NESBITT: Or inhaled the spray?

Mr. MORRELL: No.

Mr. NESBITT: And the research you do largely concerns, as you indicated, small single doses being taken from eating raw vegetables that have this stuff over them?

Mr. MORRELL: Over a long period of time.

Mr. NESBITT: Where is the information which results from this research, of which you do a lot, sent to? I presume it is available to any person who wishes to obtain it?

Mr. MORRELL: What information?

Mr. NESBITT: I would gather from your pamphlet that your division does a fair amount of research work on the long range effects of consuming small quantities of these drugs.

Mr. MORRELL: This information is what we require in the submission put forward by a manufacturer of a pesticide when he asks for a tolerance on foods. We must have this information in order to examine it and decide whether or not we will agree to his request at the level that he has requested it; whether we will agree to a somewhat lower level or whether we will disagree and refuse to set any tolerance at all. This information that is asked for is set forth here and is to be supplied by the manufacturer himself.

Mr. NESBITT: Does he apply to some other division to have his product registered with the Department of Agriculture?

Mr. MORRELL: That is true, when he asks for registration with the Department of Agriculture. We get a good part of those submissions you saw put on the table a couple of weeks ago. They come to food and drugs. So far as the residue amounts and the methods for determination are concerned, that is our principal interest in those submissions.

Mr. NESBITT: Then you O.K. it with the Department of Agriculture?

Mr. MORRELL: Yes.

Mr. NESBITT: Does the food and drug division of the Department of National Health and Welfare carry on certain basic research in the long range effects?

Mr. MORRELL: Yes.

Mr. NESBITT: When you say "some", could you elaborate what you mean?

Mr. MORRELL: Our staff is limited. There are 200 or 300 drug submissions put in each year. There are many food additives requested, and it becomes obvious that we cannot study all of them. We have been very much interested in food additives, addition of food additives such as colours, and a good part of our research program in the pharmacology and toxicology section of the laboratory is devoted to study of these products. In the case of pesticides and new drugs, we have the authority to demand information from the manufacturer, and we have the authority to refuse to allow a new drug to be sold until we are satisfied that the information provided by the manufacturer meets the requirements of the law. If we are not satisfied with the information on a pesticide in relation to the safety of it over long periods of time, we can refuse to set a tolerance. Those things are definitely specified. In the case of chemical additives to foods, at the present time we can refuse to change a standard. If a man asks for an addition of a new substance to a standard, we can refuse to amend our regulations if we are not satisfied there will be neither a health hazard nor fraud. So we do have those indirect methods of control.

Our research work is only directed at problems to which we feel we can contribute something of value and on which we feel there is need for some extra information that has not been supplied either in the literature or by the industry itself.

Mr. NESBITT: For instance, when D.D.T. was introduced—a substance used in a great many of these compounds—I suppose you would have done some basic research on the long-range effects. Dr. Rynard and others have brought up the question of fertility of animals and the like.

Mr. MORRELL: Dr. Graham might comment on that.

As you will see on this sheet containing biological data requirements, the information refers to long-term toxicity studies in item 3, and it will go through perhaps two or three generations of animals, which gives us an opportunity to examine the effect on fertility.

Mr. GRAHAM: Ordinarily, we do not do all these studies ourselves. The manufacturer supplies the data and the work is done for him either by his staff or, quite frequently, by university laboratories and independent laboratories. This work is undertaken mostly in the United States at the present time.

Reproduction studies are required to be done. We ask for two species, the rat for three generations and the rabbit or the dog for one generation.

Mr. NESBITT: This takes place with every new drug that is known to be toxic to any degree?

Mr. GRAHAM: This is for new pesticides for which a tolerance will be required. If it is a pesticide which is going to be used on a no-residue basis or on ornamental flowers, not on food, then we do not require nearly as detailed information before registration. I might add that this is in addition to appendix B of the report given the other day on the data required for registration. This additional data is for pesticides for which a tolerance is required.

Mr. NESBITT: Thank you.

Mr. ASSELIN (*Richmond-Wolfe*): Mr. Chairman, I would like to ask just one question.

What control have you over the farmer, over the grower of the food, concerning the sprays that he may use?

Mr. MORRELL: It is an indirect control in that it is based on the act itself which states:

No person shall sell a food that has in or upon it any harmful or poisonous substance.

If we examine a crop from a farmer's field and we find either one of two things, that there is on that crop a residue of a pesticide for which no tolerance has been set or that the residue of the pesticide is higher than the tolerance that has been set, we have authority to seize that crop and, if necessary, to prosecute the farmer.

Mr. ASSELIN (*Richmond-Wolfe*): How often do you check the farmers on this?

Mr. MORRELL: We have checked quite a number. I do not know what the proportion was. Our work is very frequently at the wholesale or import level, or the manufacturing level. We have seized crops and we have prosecuted some farmers.

Mr. ASSELIN (*Richmond-Wolfe*): You do not do too much field work?

Mr. MORRELL: There is a fair amount of field work. However, we have not the manpower to do the field work that we would like to do.

Mr. ASSELIN (*Richmond-Wolfe*): I am referring to the smaller farmers in the smaller areas who grow their own products in their own gardens and sell locally.

Mr. MORRELL: I do not know how many hundreds of thousands of them there would be. It is obvious that, having only ten or fifteen inspectors to put on this work part-time, we cannot hope to do all that.

Mr. COTE (*Longueuil*): There is something I do not understand in French of which I would like to ask for clarification. It appears in item 3, paragraph 5. May I have it interpreted? It says "urine and organic fuctions".

The INTERPRETER: It should be "functions".

Mr. COTE (*Longueuil*): It is just a mistake?

Mr. MORRELL: Yes, it is just an error.

Mr. BASFORD: I was wondering what is the size of the inspection staff?

Mr. MORRELL: I think we have approximately a hundred inspectors in the field now for all the work of food and drug.

Mr. BASFORD: That is for all branches and all aspects of your department?

Mr. MORRELL: All aspects of food and drug work, yes.

Mr. BASFORD: You have established residue tolerances for some seventy pesticides?

Mr. MORRELL: Yes.

Mr. BASFORD: What volume of pesticides are used for which you have not established tolerances? I presume these are on the market.

Mr. MORRELL: There are a great many pesticides for which we have no established tolerances, but these should either not be used on food crops or should not leave a residue at the time of marketing.

Mr. BASFORD: Your department really comes in after they are used, if they are used?

Mr. MORRELL: Yes, after they are used, if they are used. We have found on occasion pesticide residues in a category that was not permitted, or at least there was no tolerance established. In that case we did seize and destroy a crop of a vegetable.

You all remember the "amino triazole" scare with cranberries. We found one lot of cranberries grown in Canada which had a trace of amino triazole, and these were destroyed.

Mr. BASFORD: I wonder if there is danger with pesticides being used for which you do not have tolerances, and the fact they are used until your department comes in, after, shall I say, a hit and miss inspection or seizure?

Mr. MORRELL: We try to do the job with the inspectors that we have, and we send them into the field. They work in areas with the help of the federal Department of Agriculture and with that of the provincial departments of agriculture, and we try to locate areas in which there might be—or where we have rumours of—a misuse of pesticides. We have to make the best use of our staff. Samples of food grown in such an area are taken and sent to the laboratories and these are examined for pesticides and residues. It is not for only one pesticide that we look, but there are procedures used by which you can put extracts from the fruits and vegetables through and find out what pesticides they contain. There may be half a dozen, or one or two. These are now shown up. I think the chromatographic process helps a great deal. Once we know what they are, we are able to separate them and determine quantitatively the amount in parts per million. That is what we do. We do 1,500 samples a year, or something in that neighbourhood, in the laboratories of food and drug across the country.

Mr. NESBITT: How about the case of foods coming in from abroad, such as crates of melons and beans?

Mr. MORRELL: We do examine these. In fact we have some under seizure now which have come in from abroad.

Mr. BASFORD: You have the same authority over imported materials as you do over home grown?

Mr. MORRELL: Yes.

Mr. NESBITT: Do they have to meet your requirements?

Mr. MORRELL: Yes.

Mr. NESBITT: Do they know what your requirements are in fact.

Mr. MORRELL: I do not suppose they all do, but a good many of them certainly do.

Mr. NESBITT: How did you find out about the cranberries at that time?

Mr. MORRELL: Didn't everybody know about that? We heard from the United States food and drug administration.

Mr. BASFORD: Should it be a prerequisite of the pesticides control act that there be tolerance established before the registration of any pesticide to be used in the agricultural process?

Mr. MORRELL: In many cases this has been proven to be quite unnecessary, because they are either used early in the growing season, or they are not sufficiently stable to carry over until the marketing of the product. I think this works out reasonably well. It is seldom, when we put these fruits and vegetables through a separation procedure, that we find something quite unknown to us, or something not permitted. I do not know whether we have been lucky. But perhaps Dr. Chapman might speak on this.

Dr. R. A. CHAPMAN (*Assistant Director—Scientific Services, Food and Drug Directorate, Department of National Health and Welfare*): There is a group of pesticides which when used will not leave any residue in the food. Under these circumstances, of course, there is no necessity for establishing a tolerance for them. Some of these pesticides are applied well prior to the harvest, in the early stages of growth, and do not produce any residue at the time of harvesting. There are some used as fumigants. These may be volatile materials which disappear and are dissipated and, again, no residue remains when the food is sold. And there are other pesticides used in the soil for soil fumigation. Again, these residues or these pesticides do not get into the food and there is no residue remaining in the food when it is sold. So under these circumstances there is nothing present, and it is unnecessary to establish a tolerance. Of course, under these circumstances if there is any residue present, any amount of residue, then it is a violation of our regulations.

Mr. MORRELL: If there is no residue left, then the tolerance is really zero.

Mr. BASFORD: You come into the picture after the soil report. I wonder if we could be given some material on the number of prosecutions dealing with cream? Do you have any figures on the number of prosecutions resulting from the use of pesticides?

Mr. MORRELL: We have no prosecutions for the use of pesticides. May I put it this way: that these prosecutions—if you are referring to dieldrin in cream—were initiated because there is no tolerance established for any pesticide residue in milk, and in that case there should not have been any dieldrin in the cream. There is no tolerance for dieldrin in cream. So we took action because there was a residue of dieldrin in the cream.

Mr. BASFORD: Do you have any other particulars in the case of prosecutions where there should be a zero?

Mr. MORRELL: No, we had some seizures of food where there was pesticide present that should not have been there. I refer to the cranberries, and there was another case of broccoli in New Brunswick, but we did not prosecute it. However we had the crop destroyed under the supervision of an inspector.

Mr. BASFORD: I wonder if we are to examine all the Department of National Health and Welfare?

The CHAIRMAN: No, I think just in reference to insecticides and pesticides. Undoubtedly Dr. Morrell will return when we come to deal with drugs specifically.

Mr. BASFORD: No, Mr. Chairman, I do not mean drugs; but I have questions related to other officials who are present.

The CHAIRMAN: There are other people present. Could you give us some idea of what you are interested in?

Mr. BASFORD: I raised a question last week on a statement made by Dr. Patterson about insecticides in the home, which I would like to follow up.

The CHAIRMAN: Dr. Patterson is present and he is available when we have finished with Dr. Morrell. We hope Dr. Patterson will make a statement at that time.

Mr. WHELAN: What I was going to ask has been covered by several other members of the committee. But one of the things brought up before the Department of Agriculture officials was the importation of fruits and vegetables from other countries. You have no way to know, or your department has no way to know the sprays they are using on those fruits and vegetables?

Mr. MORRELL: Most of these things come from the United States and we do know their pesticide tolerances, and they are essentially the same as ours.

Mr. WHELAN: I am thinking of Cuba, Mexico and Central American areas.

Mr. MORRELL: I do not believe we are aware of the pesticide tolerances, for example, for the British West Indies, or areas of that sort.

Mr. WHELAN: Do you have ample testing equipment here to test them and to see if there is any carry over?

Mr. MORRELL: We have tested some, but I do not know whether you would call it ample or not. That is a matter of opinion.

Mr. WHELAN: I am a farmer and I wonder about our experimental farms which demand to have testing equipment to trace out mineral deficiencies in plants. Could they not work in conjunction with your department of food and drugs?

Mr. MORRELL: There are three, I think, provincial laboratories which are doing some testing for pesticide residue. I think that it is at Winnipeg where they have supplied two chemists who work in our food and drug laboratory under the supervision of our chief of laboratories there, and they are examining products for pesticide residue. I think the provincial health laboratory in Regina has done the same thing. I also believe the laboratory in Alberta has helped in this. I fully agree that there should be more of this done.

Mr. WHELAN: Do I understand that with the facilities which are available now there could not be a great deal more of it done?

Mr. MORRELL: With the facilities we have we are pretty busy; there is a very large volume of work.

Mr. WHELAN: Would you say there is possibly more danger in respect of the backyard gardener with his own way of spraying than there is in respect of the commercial grower? I am thinking of a residue being left or improper

sprays being used on the fruit and vegetables which are going to be consumed by the public?

Mr. MORRELL: That is a difficult question to answer. I am sure there probably is a danger in respect of the backyard spraying, but when you come to the commercial grower, the potential danger is so much greater that I think it counter-balances it. We are concerned with accidental misuse or ignorant misuse of pesticides, or perhaps deliberate misuse.

Mr. WHELAN: The commercial grower is more familiar with your rules than the good natured backyard gardener who perhaps supplies ten neighbours, and in this regard the backyard gardener might do more damage than a commercial grower.

Mr. MORRELL: That could be.

Mr. WHELAN: You do not check on these people; but do your records show a great deal of abuse in respect of insecticides and pesticides through agriculture?

Mr. MORRELL: No; not a great abuse. When we do find residues a great many of them are well below the tolerance established.

Mr. WHELAN: Do you think that farmers in general or producers of agricultural products are as well informed as any other group which uses these products?

Mr. MORRELL: I know that the provincial departments of agriculture, our own organization, and for example, the dairy farmers, through the national dairy council, and the federal Department of Agriculture, all help educate the farmers. I think a great deal of information has been distributed to the farmers. There are places where they can obtain information about pesticides. I would imagine their agricultural representatives could be and would be very helpful to them; that is, there is a large volume and a large number of sources of information on this subject.

Mr. WHELAN: In large areas, for instance the area I come from, south western Ontario, where a tremendous amount of spraying is done, would it be more practical actually to test the fruit for absorption of the sprays; would your department not be a natural one to work with them on this?

Mr. MORRELL: With the Department of Agriculture?

Mr. WHELAN: Yes, through the experimental station.

Mr. MORRELL: Yes. Of course, we have a policeman's job. We do co-operate with the federal Department of Agriculture. There is a good deal of information which goes back and forth every week.

Mr. WHELAN: I am thinking of my own area, the port of Windsor. A great deal of these things comes through that port. The experimental farm is 12 miles away where they have a laboratory and facilities. We are demanding that they have more. Could you not work in conjunction with this branch?

Mr. MORRELL: It could be; but that is a matter for agriculture to decide.

Mr. NESBITT: I realize we are dealing this morning specifically with insecticides and pesticides, but I would like to ask a question about a substance which is in some way related; that is, the use of certain artificial fertilizers, some of which I understand have a toxic effect—some of these which have synthetic urea and high nitrate compounds. Does the food and drug directorate watch for these things also?

Mr. CHAPMAN: We do not have any regular procedure for checking these. Our responsibility would be in respect of residues of these products on foods, and so far as I am aware this does not present any problem.

Mr. NESBITT: The reason I ask this question is that a month or so ago I saw a bag of commercial fertilizer which had a large warning sign on the bag to the effect that this was a high nitrate type of fertilizer. This was for leafy vegetables. The warning was not to use two weeks before harvesting or later. It is quite clear, obviously, that it would have some unpleasant effect. This seems to be a subject which is related.

Mr. CHAPMAN: Yes.

Mr. NESBITT: Is something being done in respect of this?

Mr. CHAPMAN: No; I do not think we have ever examined vegetables for that.

Mr. COTE (*Longueuil*): Can you tell me whether people develop allergies from pesticides?

Mr. CHAPMAN: It may be. You can develop an allergy to almost anything. It is possible.

Mr. BASFORD: Last week Mr. Baldwin, who is not here, raised the question whether there was inspection of meat and livestock plants to ascertain whether there were any poisonous substances in carcasses. Do the food and drug people, and agriculture, make inspections of this type in respect of meat?

Mr. MORRELL: We have examined meat in this connection. An inspector would not know whether there was a pesticide residue by looking at the carcass. He would have to submit a sample to the laboratory, where they can break it down, and analyze it for any pesticide that it contains. However, we have examined meats and have found some evidence of pesticide residue.

Mr. BASFORD: What happened?

Mr. MORRELL: In that case we certainly got in touch with the people who were producing it and settled the matter.

Mr. BASFORD: What does "settled the matter" mean?

Mr. MORRELL: We have not found any pesticide in that food since.

Mr. BASFORD: Was this fresh meat?

Mr. MORRELL: Yes.

Mr. BASFORD: How much of this type of inspection do you do?

Mr. MORRELL: We do about 1,200 or 1,500 samples of food per year at the present time. That is not all one kind of food; it is a variety of products, dairy products, meat products, fruit and vegetables. It is divided up among these. If we have reason to be suspicious, as I say, we then concentrate our efforts in that area. That is the reason we went to the west; because we knew of the hazard there; we knew dieldrin was being used and there was a likelihood of dieldrin being present in dairy products. We did find some and took action against it.

Mr. BASFORD: What sort of pesticide did you find in the meat?

Mr. MORRELL: Dieldrin.

Mr. BASFORD: I have no more questions.

The CHAIRMAN: Are there any other questions to be directed to Dr. Morrell?

Mr. ROXBURGH: In connection with the use of insecticides in the household, it was brought up by other members that with respect to some of these products there was no information available and I was wondering what we could do if an overdose of that product was taken? Could you advise as to what department that comes under. I do believe there should be information supplied in this respect. I do know that in the case of agricultural products, as has been illustrated, there is information on what to do if an overdose is taken.

Mr. MORRELL: So far as I know, these products are all under the Pest Control Products Act and I know of no other legislation which covers them.

Mr. ROXBURGH: Why then are they allowed to come through without such information on them?

Mr. MORRELL: I am not in a position to answer those questions.

Mr. ROXBURGH: Then we will have to deal with this matter at another time.

The CHAIRMAN: If there are no other questions to be directed to Dr. Morrell I would like to thank him at this time for appearing before the committee.

We have been discussing for part of the morning a pamphlet put out by the department. Could we have a motion that the pamphlet which we have been discussing be printed as an appendix to the minutes of today's meeting?

Mr. BASFORD: I so move.

Mr. ASSELIN (*Richmond-Wolfe*): I second the motion.

The CHAIRMAN: It has been moved by Mr. Basford and seconded by Mr. Asselin that the document prepared by the food and drug directorate and entitled "Biological Data Required for Food Additives, Pesticides, Veterinary Drugs and Additives to Animal Feed" be printed as an appendix to today's proceedings.

Motion carried.

Again I would like to thank Dr. Morrell and his officials for coming here this morning.

At this time I believe that Dr. Patterson has a statement to make, and I would ask the doctor to come to the front table.

Dr. Patterson is chief of the division of occupational health.

Dr. T. H. PATTERSON (*Chief, Occupational Health Division, Department of National Health and Welfare*): The occupational health division, because of its interest in all environmental factors affecting the health of working people, has become increasingly involved in problems arising from the use or misuse of agricultural chemicals.

We do not carry on a specific program with respect to pesticides, rather this type of problem is handled within the general or overall toxicological program of the division.

The human exposures resulting from swallowing pesticides in food are dealt with by the food and drug directorate. The occupational health division is interested in the exposures resulting from contamination of the skin and from inhalation of the chemicals.

Pesticides have been brought to our attention in a number of ways. Manufacturers or distributors have asked for assistance in controlling the exposures their workers experience when handling or packaging these toxic chemicals. Certain agricultural spraying operations, especially in orchards, have been investigated to determine the extent of exposure. Some cases of poisoning either in agricultural operations or through household use have been reported and investigated in co-operation with provincial health authorities. The division is called upon from time to time by the federal department of agriculture for advice in deciding on the registration of certain pesticides in Canada under provisions of the P.C.P.A.

The picture of the extent of the hazard resulting from the use of pesticides in Canada is neither clear nor by any means complete. Poisoning from pesticides, particularly of the chronic or subclinical type, is not easily recognized and more than likely it is frequently overlooked or misdiagnosed. In any case, it is not a reportable condition in Canada, and we often do not learn of cases of poisoning or even suspected poisoning until it is too late to investigate the circumstances.

Sometimes, under economic and other pressures, certain very poisonous chemicals may be put to use before full and complete information about possible side effects is obtained. This is inevitable since in some cases full knowledge

about a chemical may take years to extract, and this is particularly so when we consider that early information on toxic effects is based on laboratory animal testing, rather than data on the effects on humans. This situation makes it all the more necessary to surround the use of these newer chemicals with all precautions that are practicable, while at the same time pushing on with our research program.

The number of chemical compounds coming on the market is increasing, and those being registered for household use give us special concern for there have been occasions when either the warnings on the labels of such compounds have been overlooked, ignored, or when present labelling may, through experience, prove to be less than adequate.

We recognize the need for continuing and expanding our program for surveillance of this increasing use of pesticides. There is also a need for educating the users of the chemicals and the general public of the importance of observing the precautions and safe handling procedures.

Although a great deal is known about the toxic effects of chemicals, there still remain considerable gaps in our knowledge. This is especially so when we consider the effects of small amounts of chemical exposure over long periods of time, or the combined effects of two or more chemicals or when the chemical is combined with other drugs, which the user may be taking.

It is necessary to carry on research to determine these effects, and the scientific officers in our division carry the dual role of both researcher and consultant to the Departments of National Health and Welfare and Agriculture especially on the toxicity of certain of these chemicals.

We are also called upon by other departments concerning health effects of pesticides.

We also recognize the need for more data and information about suspected and actual cases of pesticides poisoning, and we are trying to gather such data with the co-operation of provincial health departments. One specific study is being conducted in orchards in Quebec—and this is nearing completion now—which will provide some of the much needed information.

We do not wish to overlook other important types of environmental hazards in our concern for pesticides. If it becomes necessary to apply stricter controls over pesticides for the protection of the public, it will be necessary to provide specially qualified personnel and facilities to effectively carry this out. At present, we provide certain types of services to deal with occupational and certain other types of environmental exposures. At the same time, we are endeavouring to determine the extent and seriousness of the pesticide problem for Canadians.

The CHAIRMAN: Thank you Dr. Patterson. Are there any questions for Dr. Patterson?

Mr. NESBITT: I understood that it was the responsibility of the food and drug division to look after the immediate toxic effects caused by the swallowing of insecticides. Yet I gathered from Dr. Morrell that they were concerned chiefly with the use of these things as it applied to the spraying of fruit crops and in the preparation and processing of food, which is of a long term nature. Perhaps it is just a matter of phraseology but there seems to be some contradiction there.

Mr. PATTERSON: I think Dr. Morrell may enlarge on this, but in giving this information what I meant to say was that under legislative authority the food and drug directorate is directly concerned with food residues.

In addition to this, the poison control centres which have been set up by the food and drug directorate have been instrumental in developing this type of program across the country. They also have a great deal of information

concerning the acute toxicity of these chemicals, which is the usual way in which you get the accidental form of and use, and suicides, or the cases of children who get into the poison.

Dr. MORRELL: We, in the food and drug directorate, are concerned with pesticides taken by mouth whether by food, which is our main job, or accidentally by poisoning. In the latter case of acute poisoning, I think taking it by mouth is the main problem. But we are interested indirectly as a directorate in the inhalation of or contact with poisons, which comes about through contact with the skin.

Mr. NESBITT: Or by immediate swallowing?

Mr. MORRELL: Or by immediate swallowing, but only in terms of the poison control program.

Mr. ROXBURGH: Who is actually responsible for the rules and regulations when a manufacturer puts out a product? When you say "whatever the material is", then does it stay wide open? There are some products put out with antidotes and directions, while there are others with none. Who is responsible for whether this should or should not be done?

Dr. PATTERSON: Legislative responsibility in this area rests with the Pest Control Products Act. In Canada this is the only legislation we have over the control of these chemicals, and this makes it possible for these chemicals to be sold. In the statement given by the Department of Agriculture they outlined the procedure under which they authorize the sale of these chemicals for sale in Canada.

Mr. ROXBURGH: There must be some authority to the effect that no pesticide should be put out, where the average person is handling it,—without this information on it. It is not fair to these people who handle it; and it is not fair to the centres that are supposed to look after individuals who become poisoned—whether it be a child or a suicide case. Can we not have a motion from this group here to the effect that it has to be done? I think it is criminal. Surely there must be some authority.

Dr. CAMERON: Mr. Chairman, at the risk of further confusing the picture, I feel I might contribute some clarification. We are dealing with pesticides, which include among them very dangerous toxic substances which are greatly desired and extraordinarily important in securing good crops.

Now, the licensing of the sale of pesticides is regulated under the Pest Control Products Act by the Department of Agriculture. Any requirement in the labelling of pesticides can be regulated under the authority of that act.

In the Department of National Health and Welfare we have two roles to play. I think you can put it that way. Under the Food and Drugs Act we are responsible for the quality of foods and drugs and for the advertising of foods and drugs and other matters related to foods and drugs whether offered for sale or sold in Canada, wherever they come from. This means that Dr. Morrell and his staff—as I think he has explained—immediately become concerned when a food is offered for sale, with the question: does this food contain a pesticide, and if so, is the amount of the pesticide within the limit of the legal tolerance.

These are two problems; and he can, with the authority of the Food and Drugs Act seize a food and destroy it, reject it, or otherwise take action to protect the public.

Now, in parenthesis, Dr. Morrell and his staff, and others in the department were responsible for the initiative leading to the setting up of a card-index system on all sorts of household chemicals which might cause harm particularly to children in the household. It seems reasonable for Dr. Morrell to tackle this job, because they have such a large volume of information available. So a card-index system of which there were 6,000 cards originally—it is a large business—

has been established in an effort to maintain and supplement the original information. The food and drug people limit their responsibility to providing information to those who operate the poison control centres. In exchange for the information the poison control centres are asked to report back to food and drug, to Dr. Morrell, their experience in terms of the poisoning and outcome. In that way we can get a certain amount of statistics about poisonings which have been of some value; although—and again in parenthesis—this is what you might call a side-line activity of food and drug really, to assist in connection with the poison control centres.

Mr. NESBITT: It is a gratuitous activity.

Dr. CAMERON: Yes; that is a good word, and it did seem reasonable because of the information available. I have spoken about two pieces of legislation which bear on pesticides. In addition, we in our department are concerned to provide expert information to provincial departments of health and in various fields of public health. One of these is called occupational health; some might call it industrial health. It has to do with the hazards of a workman at his job. Whether it is industrial gases, or what have you, one of the items in the program of the occupational health division to which Dr. Patterson has referred, is the hazard to the workman handling pesticides.

As Dr. Patterson has mentioned, generally speaking they take two forms. There is the workman in the plant where the pesticides are produced, and obviously there is a potential for exposure there. And with the other particular group of workmen involved, these are obviously the farmers, orchardists, and others who are applying the pesticides; and as you have heard from Dr. Morrell the Food and Drug Directorate is concerned with the pesticide residues on food. Dr. Patterson is here to talk to you about this problem of occupational exposure. But I might say this: Dr. Patterson and his group act in the role of consultant to the people in the Department of Agriculture who are responsible for administering the Pest Control Products Act. You might say that they are the medical consultants to the Department of Agriculture, and there is a good deal—I am happy to say—of collaboration between them. Thank you.

The CHAIRMAN: Thank you very much, Dr. Cameron.

Mr. BASFORD: Well, I am grateful to Dr. Cameron for his statement, and I raised the point before the committee that there may be problems that arise in connection with large areas in which we need more knowledge, because it has been my impression from previous evidence that our officials have endeavoured to explain to us that the situation is perfectly well in hand. This almost struck me, as a layman, as a point, possibly, of complacency. Under the Pest Control Products Act the concern is with the registration of pesticides and their safety, so long as they are used as directed; but there is no provision in the Pest Control Products Act in respect of the risks involved in misuse. Perhaps I have not made myself clear. The danger here seems to be in the risk of misuse. It seems to me this is one of the great dangers in respect of pesticides.

Dr. PATTERSON: There is a potential hazard. These are toxic chemicals, and we recognize there is always a potential danger to anyone handling these in such a way that they become exposed to them to a degree that they become poisoned. From the standpoint of health, which I mentioned in my statement, one of the most important steps which probably should be contemplated, or a great deal of emphasis put on, is education of people who for economic reasons, must use these chemicals to produce the food. So, there is a matter here of education. In addition to this there are certain aspects of labelling which are not yet resolved. I believe the departments concerned are well aware of this. There have been and are meetings going on between the departments to discuss

the matter of labelling agricultural chemicals. There is the question of where should the authority rest for approval of a label? There may be reticence on the part of one manufacturer to see his label designed in such a way that it scares people away when there may be an equally toxic chemical in someone else's product which has a less startling type of label. This is an area of which the Department of Agriculture and ourselves are aware, and we are exploring ways and means of attempting to see if we can correct this situation.

Mr. BASFORD: Under the Pest Control Products Act, if a pesticide or a new pesticide is determined to be safe when used as directed, it is registered or allowed to be registered?

Dr. PATTERSON: It is, yes.

Mr. BASFORD: So far as I can determine the risks in respect of the misuse of this are not really taken into account, and sometimes these pesticides might be so dangerous that the risk of misuse far outweighs the risk in use as directed.

Dr. PATTERSON: It is a difficult area to assess. If the label gives the proper instructions for safe handling, this is almost the same as what you would encounter in respect of a doctor's prescription; he gives certain instructions which have to be followed. You cannot increase the dose; because a little bit seems to work; you should not say on your own that more would be more effective. Almost the same principle applies in relation to these chemicals.

Mr. BASFORD: In the case of a prescription, the doctor is able to make a judgment as to whether or not his patient is intelligent enough to use the prescription sensibly. This is not the case in respect of pesticides.

Dr. PATTERSON: I think the crux of the problem, probably, from the standpoint of health is in determining to what extent you have to place restrictions on the sale and use of these chemicals.

Mr. BASFORD: I was wondering about household pesticides where the economic factor is taken away. There is really no economical factor involved in whether I have flies in my kitchen or not.

Dr. PATTERSON: Certainly in some instances if certain types of pests are not controlled, they would constitute a health hazard, and there is every justification for using the chemicals under these controlled conditions. I think every medical man will agree that there is some question with regard to the use of a highly toxic chemical to control something which may be only a nuisance.

Mr. BASFORD: Would you think there should be more control than there is now over the sale and distribution of household insecticides?

Dr. PATTERSON: I think this is an area which has to be explored very carefully, and the extent of the problem has to be determined. I would like to say that pesticide use in Canada, as I see it at the present moment, is such that it is not a serious problem when we compare it to highway accidents and other types of hazards to which we are exposed. However, I do think it is timely that the government departments, such as our own, should be exploring this question very thoroughly to see that the situation does not become much more serious in the future, and at the same time develop these other areas such as educating people in the safe use of such chemicals. I do not know whether or not that answers your question.

Mr. BASFORD: The Department of National Health and Welfare primarily is concerned with promoting and protecting the health of the public, and the Department of Agriculture is concerned with the promotion of agriculture essentially. Should not the Pest Control Products Act be under the administration of the Department of National Health and Welfare, because surely the health of the public must stand first?

Dr. PATTERSON: I would like to make one statement now. I am not in a position to recommend where the authority should lie with regard to controlling the sale of these products. I believe that the people who are administering the Pest Control Products Act have been doing a good job. This has been proven by the fact that the experience in Canada has not been bad. The sale in large quantities of some of these chemicals in agricultural areas probably is much better dealt with by the Department of Agriculture which is much closer to this because there are a great number of factors that have to be considered other than health. That is only one aspect and if, in any occupation where there is a hazard, you can train and educate your people to use these properly, then the job is done under controlled environmental conditions.

Now, when we get into the area of household chemicals, this is not as clear because we do have a problem then in the placing of quite toxic chemicals in the hands of people who may be quite careless in their use.

Mr. MITCHELL: Would you put in the category of pesticides products chemicals such as warfarin used for the eradication of mice or rats.

Dr. PATTERSON: That is a pesticide. Even chemicals which control weeds could be termed pesticides.

Mr. MITCHELL: As you are aware, preparations such as warfarin are available and this mouse seed, which is a seed saturated with a strychnine solution. These preparations certainly are quite poisonous and yet they are made available for sale, under warnings, of course, on labels in each case. I am reverting to the original matter of the labelling of antidotes in respect of what we have been discussing, namely household pesticides and so on. In respect of these two cases which I mentioned they are quite well and properly labelled with protection and the necessary antidote, if required. However, I would say they are even more potentially dangerous in their use than many of these pesticides to which we have made reference.

Dr. PATTERSON: Well, it is a very complex area. The chemicals in these new compounds which are coming out are extremely difficult to assess from the point of view of toxicity, and a slight change in structure brings about a different picture altogether in some instances of the toxicity. Under certain conditions chemicals may be very toxic and, in others, quite safe.

Warfarin is a toxic chemical because the rat or rodent cannot regurgitate the poison and, as a result, it is poisoned by it. This is not so in humans; they will regurgitate a poison of this kind and, as a result, it is not dangerous from the standpoint of handling.

Mr. MITCHELL: By humans?

Dr. PATTERSON: Yes.

Mr. MITCHELL: And, intake by humans would not be the same; I realize that.

Dr. PATTERSON: I think it already has been mentioned—I know it has been by Dr. Morrell—that in the area of investigational research of this whole problem of pesticides our interests go much further, as Dr. Cameron has mentioned, than just pesticides. We consider them just one of the industrial chemicals with which we are concerned, and there is a very large number of these chemicals of other kinds which are causing occupational disabilities in our country with which we have to be concerned. No one department can undertake to do all the research that is necessary; there needs to be research carried on not only within government but within our universities, and close contact made with other research centres throughout the world in order to keep up to date on the effects of these chemicals. It takes a long time to cover some of the information, particularly with respect to human toxicity, and some of the research is along the line of developing methods by which we can measure or diagnose toxicity at much lower

levels than what we were previously concerned with. We are not as concerned any more with the acute type of poisoning as we are with the long term effects, the possibility that these will cause a chronic illness at a later date.

Mr. BASFORD: What amount of money is being spent now on that sort of research in Canada?

Dr. PATTERSON: Well, I have a list of the public health research grant projects. These are the grants supported by the federal health grant program in this area.

In the past three years—and actually three of these have only occurred in the past year—there have been five programs; that is, five specific projects outside of what we are doing ourselves. We are doing a limited amount of work on the enzyme response to pesticides in trying to see whether we can develop certain new or diagnostic tests or methods by which we can detect poison at an early date. The total amount runs roughly to about \$80,000. I would not want to be quoted on that figure I have given because I do not have the exact figures of what the grants have amounted to up to date.

Mr. BASFORD: What were those five specific ones?

Dr. PATTERSON: There is one being undertaken now by the University of Montreal, at the Industrial Hygiene and Air Pollution Institute, in connection with the public health hazards involved in indoor use and storage of pesticides in the province of Quebec.

There is one at the University of Toronto in Toronto in connection with the toxicity of drugs and insecticides to the fetus.

There is another one in Edmonton which is more of a basic type of research; it concerns the screening for pesticides and antibiotics in milk and milk products as a public health measure.

There is another in the University of Saskatchewan in respect of neuropathology of dieldrin poisoning in experimental animals.

And, there is one which is just being completed in connection with the orchards in Quebec, of which we spoke today, namely the survey of occupational health aspects in the manufacture, formulation and use of insecticides in the province of Quebec. This was a three part study in which they first reviewed the literature concerning the pesticides which are being used in the province of Quebec, followed up by a second investigation of analysis of the concentrations to which people are being exposed. This is not just in respect of food concentration or the residues left on the fruit or the leaves of plants but the amount of material that a person gets on his skin and the exposure he receives through either skin absorption or through inhalation of the dust during spray operations or in trimming after the spraying operations. This is being followed up, and the part which is not completed is the clinical study of the workers who were using the sprays.

Mr. BASFORD: How is that money made available for that research?

Dr. PATTERSON: Perhaps Dr. Cameron would like to speak of the grant program.

Dr. CAMERON: It is part of the health grants program—that is, the national health program of the department—and these grants are made available to provinces for projects which they select and they apply for an allotment of the appropriate grant.

Mr. BASFORD: Suppose somebody at the university wants to do some research. Would he have to apply?

Dr. CAMERON: If someone at university, or in a provincial establishment of any kind, wished to carry out research work of this kind, he would apply to the provincial department of health, and if the provincial department of health approved the project, they would put it formally up to us, and if I

approved it, as deputy minister, the money would be allocated to their share of that particular branch.

Mr. BASFORD: Are you doing anything to try to encourage the universities to do more of this work? It has been said that there is a lack of personnel.

Dr. PATTERSON: Yes, we maintain contact with the universities, and it was largely through the effort of people in our own division that the research institute at the University of Montreal undertook this work. The purpose of this new institute is to undertake research in this area. We make contact with other universities, and if there is interest expressed, and if they have the staff and are prepared to do certain types of work, we would lend them every encouragement.

In the provinces many of these things are developed from interest on the part of the provincial health departments. Where they have a problem they may approach the university and ask them to look into it; and as a result of looking into that problem they may see the need to set up a research project. And if they are prepared then to undertake and to follow up the practice of applying for grants, then this comes under the regular grants program.

Mr. BASFORD: Do you know if any manufacturers are awarding scholarships or bursary grants in this field?

Dr. PATTERSON: I do not know of any with regard to the health aspects, but I think it has been mentioned previously that the chemical industries themselves make use of studies which are the result of some of this information. I think generally they publish the results; but there is not a great deal—as you can gather from what I have described—in the way of a research program. There is not a great deal being done in Canada in research on the effect of pesticides. It is such a broad field too, that I think that any research program which is undertaken has to be carefully entered into, because there is so much work going on throughout the world that whoever is responsible for setting up a program in this area should be well informed of all aspects now being investigated.

The CHAIRMAN: Are there any questions?

Mr. ROXBURGH: I hate to go back to this business, but the pesticide registration act was responsible, as I understand it. Do they have authority over labelling? Now, as I understand it at the present time—and I would like to be corrected if I am wrong—there are different departments. You are working with the Department of Agriculture. Does the obligation rest on them to ask you, or do the different departments pass on the information to them as to what should or should not go on the label?

In the case of an antidote being put on the label, do they wait for the different departments to recommend that, and if it is not recommended by other departments, then it just does not go on? Surely to goodness there must be something definite. You cannot just put out a product which is detrimental to the health of the nation. Whether it be a child who takes it, or no matter who takes it, there must be somebody responsible, and if at the present time they are responsible, and it is not on the label, then they are wrong. There is a weakness somewhere.

We have nothing to worry about in the big commercial field, I realize that. But every once in a while you will pick up the papers—I know it happened in my own community—only to find that somebody has picked up something; it does not always have to be a pesticide; it could be a drug. Most of the time it is due to carelessness on the part of a parent. That is true in the majority of cases. However I cannot get it out of my mind. You have given us some wonderful information. Please do not misunderstand me. But still there is a weakness if we put out a product and there is no antidote indicated on the label.

Now, who is responsible? Where is the weakness? Let us get at it! Let us do something! Surely that is what we are here to do. Surely we can see that our government passes legislation, or at least advises provincial governments that may be responsible. I do not know if that has been done. But I would say this is the simplest thing we have to do. We have talked about pesticides from every angle, and there have been questions asked here and there. You do all this research work, yet you finally end up by putting a pesticide out on the market, and we have neither rules nor regulations telling us that before it goes out it has to have the antidote written on it, no matter whether it is small or big or anything else. I maintain it should be there. I might as well say right here and now that I am not satisfied with the answers that have been given. I am not saying that your department is responsible. You all have your part to play. But there must be some angle or point we can get at here.

Dr. PATTERSON: I think I mentioned previously that we recognize this weakness.

Mr. ROXBURGH: Yes, I noticed that, and I thought that when you answered Mr. Mitchell you mentioned it. After all, we are only here to learn, and if we do happen to have a thought, maybe it might support somebody in respect to some angle, now that we have brought it up. Is there any part of the department now which will take this act and go through it and see that it is going to be handled, because it might be your son, your daughter, or your grandson who suffers. It does not matter who it is.

Dr. PATTERSON: There is an inter-departmental committee now dealing with this matter, and some of the questions you are raising are being dealt with and considered, and there will be specific recommendations.

Mr. ROXBURGH: That is fine. Thank you. I have my answer. You say you are working on it. That is fine, because I think it is very, very essential. We can talk all we like about all the rest of the work that should be done here and there, but when it is all done and we know all about it, if we put something on the market and something happens, then there is a doubt. But you have answered my question now and I thank you.

The CHAIRMAN: Do you wish to comment, Mr. Jefferson?

Mr. C. H. JEFFERSON (*Chief, Fertilizer and Pesticide Section, Plant Products Division, Department of Agriculture*): Mr. Chairman, perhaps I might make a statement, because it does relate to the pesticide control act, that part of the question as to who has the responsibility. I think a name was mentioned earlier, when it was said that it was given to the Minister of Agriculture to administer the pesticide control act, and it is under that authority and his authority that the precautionary labelling requirements are laid out. But as also indicated, it is not a simple matter. I do not believe the answer is as simple as saying that every pesticide must have the antidote or first aid treatment on the label. If all pesticides did have such precautionary labelling, then, and in comparison with many other chemicals and substances which are in our environment, they would appear to the layman as being more hazardous than other materials when in fact they may be far less hazardous.

In other words, what I am endeavouring to say is that the precautionary labelling for one group of commodities should not be so much more sophisticated than for another group.

Mr. ROXBURGH: Then we will have to get to the other group too. Why compare one group to another group? Granted, the other group may be worse, but that does not say one group will not kill a child if there is not an antidote.

Mr. JEFFERSON: I think it is important there should be a balance. If the public's attention is unduly focused on one group of products which may have a potential danger, its attention is being drawn from other groups of products,

and the net fatality in respect of the whole group may be higher. I think that if the members of the committee would take a look at the causes of death in Canada as set out by the dominion bureau of statistics, they would see that pesticides are a very minor cause of accidental death. I think this is the area which we are discussing now; that is, occupational hazard. If you look at these figures you will see that pesticides are a minor cause of fatality. You may hear of causes of death due to strychnine; but these were not cases of rodenticides. These were products other than rodenticides; they were not pesticides at all, but did contain strychnine.

Mr. ROXBURGH: You have given us a good explanation. We are dealing with pesticides, and there are other groups of materials. It is the same thing as speaking about tobacco and alcohol. Alcohol does ten times as much damage as tobacco; yet tobacco is brought to the fore at the present time because of certain facts brought out by the medical people.

In this instance we are dealing with pesticides and I still feel, no matter what happens, the pesticides are what we should deal with and need to protect against. These other facts you are illustrating of persons being killed by automobiles, and so on, have to be dealt with under a separate thing entirely. If they are falling down on the job, we have to get after them.

So far as I am concerned, any pesticide that goes out should have an antidote.

The CHAIRMAN: I think it has been brought out that not all pesticides and insecticides have an antidote.

Mr. GRAHAM: Not all have a specific antidote.

Mr. CASHIN: My question arises out of the statement about sophistication. Are you implying by that that it may, by drawing attention to this, have the effect of minimizing the effects in some other groups? If so, could you give us an example of those other groups?

Mr. JEFFERSON: I took the term antidote to apply primarily to first aid treatment in the broad sense, and not in terms of a specific antidote which would have a sort of chemical neutralizing effect.

To deal with the other part of your question, I think the best way to answer it perhaps is in relation to this dominion bureau of statistics report as one group of statistics which does, I think, illustrate the point. The different categories are in there with the causes of accidental death.

Mr. CASHIN: I quite understand your reasoning. Your objection, if I may call it that, to what Mr. Roxburgh suggested is that it would draw undue attention to the ill effects of one group of products when there are others which actually are much more dangerous?

Mr. JEFFERSON: Yes. I think this applies primarily to the householder. If you look under the kitchen sink at the cleaning compounds that are there, you will find that some of these are extremely corrosive.

Mr. CASHIN: I am just trying to get the point you were making. Is your point that it might give the impression, if something else does not have as much attention drawn to it, that it is not in fact dangerous when in actuality it is dangerous?

Mr. JEFFERSON: This is my point. You may have a pesticide on a shelf which contains sodium arsenite and which has a skull and cross-bones symbol on it and a full warning. Beside it there could be a sodium arsenite product, for example, which is not a pesticide, but which is some other form of strychnine product and there is no skull and cross-bones symbol or warning. I know that I have looked in my household and have found these products which are poisonous. We are not alerted to the fact that they contain dangerous materials.

Mr. CASHIN: Is the point which Mr. Roxburgh brought up, to which you have given a reasonable answer, an impractical one; that is, that as many of these things as possible be brought to the attention of the public and be marked as dangerous or poisonous? Is this an impractical suggestion from an administrative viewpoint?

Mr. JEFFERSON: Speaking personally I do not think it would be an impractical thing to require such labelling. The committee to which Dr. Patterson has referred is, as I understand it, looking at this whole problem of the hazard of materials including pesticides and appropriate labelling, so that the public will be warned of the potential hazard of all of these products. As I think may have been brought out earlier, there is a Pest Control Products Act and there is the Food and Drug Act. This covers many things including precautionary labelling. These areas in terms of the basic authority are now covered; perhaps not to the extent that you would have them covered, but none the less there is that basic authority and machinery in operation to deal with precautionary labelling.

Mr. WILLOUGHBY: May I suggest that we probably are placing too much emphasis on relatively unimportant things in this discussion at the present time. I think the important thing is to discuss the problems related to the long term effects of these pesticides we are dealing with. And, when it comes to the immediate consideration of the swallowing of these poisons I would suggest the average person in the average home is not qualified to deal with it, and if the name of the antidote was on it they would not know what to do with it anyway. It should be obvious that the patient immediately should be taken to the hospital where he or she would be dealt with in a scientific manner and where the necessary antidote would be available through the poisons committee in these hospitals. If it is not available there they could find out the required information by telephoning the provincial centres which have all these things listed.

I think it is impracticable to suggest we should put poisonous labels on everything which is labelled. The same things applies in medicine; a child may go to the wrong cupboard. In these matters it is simply a matter of being practicable about these things, and we should realize that the poison centres to which the patient is taken is the place that needs the information and they deal with it accordingly.

Mr. ROXBURGH: But the trouble is they have not the information.

Mr. WILLOUGHBY: Oh, yes.

Mr. ROXBURGH: Not in all cases though.

Mr. WILLOUGHBY: No.

Mr. ROXBURGH: But if it was set out on the product they would have the necessary information. It has been proven over and over again that this is necessary. We should do everything possible to ensure that something can be done if something happens. I have dealt with poisons practically all my life. This information is not in all the centres, and that really is what brought this situation up. There may be some truth in what you say but we are becoming more and more practicable and any information that is available as to how to handle a poison would prove very beneficial. Different meetings are being conducted regularly in connection with these problems and, believe it or not, people are becoming more educated all the time and they are not as dumb as a lot of people seem to think in regard to knowing what to do in such cases. It may just mean a person's life. No matter what happens, do not tell me that it is not important or very important that when a child has taken poison there need not be anything on that label. Do not tell me that is not important to the nation because, in my opinion, it is very important. I am very surprised to hear what has been said. I will tell you that is one of the most impor-

tant things I can put forward as far as the over-all picture is concerned. This information is very vital and very necessary to us. But, if or when that is done we should have some form in which someone can do something in the case of an emergency. It may concern a child in western Canada or perhaps it would concern only a dozen children in a year. But, if that dozen or half dozen, or if that one child was saved because of a little knowledge being placed on there, do not tell us that it is not important.

These gentlemen here in the different departments have projects that are beyond me and the average layman; we realize that. These people are going to go on because they have certain information upon which they are working, and when that is all done do not tell me that if this group here was responsible for finally getting something practicable in a small way which saves the life of one child in the dominion of Canada that it is not worth while.

We are going to deal with all these other subjects. This is the third meeting we have had and we have sat for 2½ hours every meeting. We have dealt with the over-all picture and we will be dealing with the different departments as they come along. However, this was brought up today. This is part of today's work, and tomorrow will be another day. But, this is what we are dealing with now, namely insecticides and the labelling of certain products, so why should not we be discussing it when it is so very important?

Mr. WILLOUGHBY: I do not entirely disagree with what Mr. Roxburgh said but I do feel we are getting into a field which should be the concern of the medical man who is involved in the case. I do not think an actual householder has much alternative but to make the child vomit, unless it is a corrosive, and the average householder does not have an antidote for many of these things. Why put it on the label when the child has to go to the hospital in any case and be dealt with there.

Mr. ASSELIN (*Richmond-Wolfe*): What I am about to say I mentioned earlier in the meeting. It concerned taking my young child to the hospital. In this case there was no antidote written on the label. They spent one and a half hours pumping out the child's stomach, and I was there sweating it out for about one and a half hours because they could not find an antidote for it. Now, if that had been much more serious than it turned out to be, I could have lost my child. Luckily, it was not that serious. All I am saying is that if there could have been an antidote printed on the label of the box it would have expedited this to a very large extent. I did take the box with me but it did not have the antidote on it. That is all I could do. As I say, I took the box with me. But, if there was an antidote written on the box I could have said: here, doctor, is the box, you handle this, and in this way the situation could have been remedied very quickly.

Mr. WILLOUGHBY: That information should have been available to the poison centre in the province.

Mr. ASSELIN (*Richmond-Wolfe*): But it was not.

Mr. WILLOUGHBY: May I ask Dr. Cameron if this is not available in the poison centres, in the hospitals and in the provincial centres?

Mr. CAMERON: We have endeavoured to keep the poison control centre information up to date. But, I cannot be sure; in fact, I am pretty sure that this is not always completely up to date.

Mr. BASFORD: As some members have been relating their own personal experiences I might say that before I was a lawyer I was a zoo keeper; we had a polar bear poisoned with 1080. The veterinary experienced an awful time finding out what we were supposed to do in connection with a 1080 poisoning of a polar bear, which raises the question which I am not sure the doctor can

answer. Actually, 1080 is available only to commercial bonded exterminators. Could you tell me under what regulations or act that is covered. As I understand it, 1080 is legally a pesticide.

Dr. PATTERSON: This gets into a discussion of the responsibility in the health field, and it rests primarily with the province under the B.N.A. Act. Some of the provinces have instituted legislation now in respect of pesticides. I might say that this is not uniform across the country by any means; some have made certain requirements or restrictions in respect of the custom sprayer or the pest control operator in which he can or cannot use certain pesticides under certain conditions. These same restrictions do not apply to the individual citizen, and if he purchases this particular product from his hardware store or elsewhere he can use it as he wishes. The legislation in respect of this particular one you are speaking of is a provincial one to a specific group.

Mr. BASFORD: None of the federal legislation provides who can use what sort of pesticide?

Dr. PATTERSON: No. It is licensed under the Pest Control Products Act for specific uses.

Dr. RYNARD: Mr. Chairman, I first would like to say, in reference to this chit chat between Mr. Roxburgh and Dr. Willoughby, that your problem is that although you can give a simple antidote in the home, maybe a little mustard in water or salt and water, that is about all you can do. Let us recognize this fact, because this may save someone's life in the end. The best thing you can do is to get that child to a doctor as fast as you can—and, that is fundamental if you are going to save lives.

I want to point out that with all the printing in the world you can only do so much in the home, such as giving mustard and water or salt and water and, perhaps, stick the finger down the child's throat. However, in all likelihood, you will not get him to vomit. Perhaps you, Mr. Chairman, have tried this. It is necessary to use a pump. Therefore, it is my suggestion that, if possible, print on the product a simple antidote and then get the child to the hospital as fast as you can.

Mr. CASHIN: One of the things which may result from this matter and which may be examined in connection with the problem of antidotes is that it would seem that there are antidotes for some products, while for others there are none. To me this seems to create a greater problem than the one which Mr. Roxburgh brought up, although in that case it would seem that if the poison control centres at the hospitals had this on file, they were more fortunate. But what about the products concerning which we have no information on file? Is it possible that with the number of products involved some restriction should be placed upon them because this information is lacking? Or should we demand this information before they are put on the market? Is that a practical thing to ask?

Dr. PATTERSON: Well, there is no one yes or no answer to this question, not only in the field of pesticides but also in the use of other chemicals and other types and processes in industry. For example, there are hazards which have to be weighed against the need for carrying out or using the particular item, and if there are other ways of using it, maybe it could be given a specific use under specific conditions.

Mr. CASHIN: You mean that a greater amount of good would be obtained then the risk involved in using it?

Dr. PATTERSON: That is right, but it almost amounts to an individual assessment of each particular case.

Mr. CASHIN: Is it practical? My experience as a lawyer was neither that of a zoo keeper or of a chemist; but is it practical to demand of our labor-

atories, or of science, when you put things like this on the market, that antidotes be made available? Is this too much to ask, or is it an impractical or an unreasonable demand?

Dr. PATTERSON: I think there needs to be some clarification with regard to antidotes. The basic principle underlying precautionary labelling from the standpoint of health, is that it should include first aid measures. As already pointed out, you cannot include on the label medical information concerning treatment which can only be given by a doctor, and perhaps in hospital. It is impractical to do this. However I do agree that this information should be available somewhere for the doctor, particularly in the case of new compounds as they come out. And this is what the department is trying to do in regard to poison control centres; that is, to get this information out as quickly as possible.

Mr. CASHIN: There is a physical limitation to your staff and to the things you can do.

Dr. PATTERSON: That is right.

Mr. CASHIN: Could it not be made a requisite for the company producing the product in their laboratories or in some central industrial laboratory to provide these things?

Dr. PATTERSON: To go on further, it seems to me that with these cases you may have symptomatic treatment. Often when a person is given physician's care and treatment in a hospital with, he will recover. So it is not just a matter of one antidote to be developed by the company. I do not think it is practical to demand that each company have a specific antidote for the chemical that it is bringing out, because treatment of these cases in hospital may result in recovery. There are cases, I think, of certain chemicals which are now denied registration on the basis of their being too toxic; and the chemical companies themselves—and I have gained this through contact that I have had with them, and I know that other departments of government have had the same experience—the major chemical companies, are sincere people and they will not introduce some of the more toxic chemicals if they anticipate fatalities from their use. They weigh the hazard themselves before they undertake to have them registered. It is not all a matter of legislation here.

Mr. CAMERON: I think Dr. Patterson has dealt with my point arising from your question. There are products for which there is no antidote, and there may never be a specific antidote for that particular preparation. I think that is one of your points.

Mr. WILLOUGHBY: In connection with poisons, I happened to be in a hospital where a child was brought in after having swallowed a whole bottle of worm medicine, and when the doctor could not find the thing listed on the list of poisons, he telephoned the provincial centre, and they did not have it listed because it was an American product. So they telephoned to the place of manufacture which was in Kansas, and they found that the factory had been closed out. Then they telephoned to Washington to find out what was in the substance, and after an hour they brought back a report. The factory had closed because the medicine consisted of salt water with some colour.

Mr. MITCHELL: What, no saccharine?

The CHAIRMAN: Your chairman would presume to ask a question. Is there any evidence in the literature, medical or agriculture, of any actual cases of chronic poisoning arising in respect of insecticides or pesticides?

Mr. GRAHAM: From ingested foods, no; I do not know of any chronic poisoning.

The CHAIRMAN: What about it from the occupational point of view?

Dr. PATTERSON: I can not immediately recall any human data. As mentioned in the earlier statement this lack of information, is one of the disadvantages we are up against. It has been proven in other centres through experimental animal work that you can produce chronic toxic effects with small exposures over long periods of time.

The CHAIRMAN: In the figures which Dr. Graham gave us with respect to mortality and morbidity in cases of death of the people in 1963, was there always some insecticide or pesticide involved, or was it of an accidental nature or of a suicidal nature? We would appreciate it if you could give some of those facts to the committee because it would help us; I mean the morbidity causes. What exactly happened? Did somebody swallow something, or was a farmer spraying his crops?

Mr. GRAHAM: In 1963 there were four deaths reported to the poison control centre. One was from taking lindane pills used in a vaporizer; I do not know the age of the child, but it was a small child, and he picked up these pills and accidentally swallowed them.

The second case was that of a weed killer, of which we do not know the name. It was in British Columbia, and it was a press report. A person in an institution there was using a weed killer, and he did not use the protective mask that he was supposed to, and the result was that he died.

The third case was the one I mentioned previously, of a chap in Hamilton who opened a bottle of nicotine with his teeth, and in doing so accidentally ingested some of it.

The fourth case was that of a small girl in British Columbia. I think she was only a few months old, and she grabbed hold of a bottle just after her mother took it off the shelf, and swallowed a couple of ounces of malathion. She died despite two specific antidotes which were given, because she had taken such a massive dose; she died in about five or six days. There may have been others not reported to the poison control centre and of which we are not aware.

The CHAIRMAN: What about the cases you mentioned of persons who were only sick; were they mostly as a result of occupational accidents?

Mr. GRAHAM: These statistics do not say whether or not they became sick; they just say these persons were treated at the hospital. First aid was given in some instances. In many cases they had only swallowed a few drops of dilute material. There were instances where parents, or someone else, had brought these persons to the hospital for treatment.

Mr. ROXBURGH: How many would there be?

Mr. GRAHAM: It was in the order of about 500.

Dr. RYNARD: I would like to add that those figures would be very inaccurate because most of them would not be reported.

Mr. GRAHAM: These are only those which are reported to poison control.

Mr. BASFORD: What is this poison control of which you speak?

Mr. GRAHAM: The poison control centres of which Dr. Cameron spoke.

Mr. BASFORD: We have been speaking about provincial poison control centres.

Mr. GRAHAM: I am speaking of the over-all poison control program throughout Canada.

Dr. PATTERSON: With regard to the question about chronic poisoning, I might give you an example of the complexity of the thing, and the danger of even those who are associated with this problem of pesticides overlooking certain aspects. There are cases of chronic poisoning with mercury, for

instance, through exposure to other chemicals which are also used for pest control.

The CHAIRMAN: If there are no further questions, I would like to thank Dr. Morrell, the other officials of the department, and Dr. Patterson.

The meeting is adjourned until next Thursday at which time we will have the Minister of Forestry and his officials before the committee.

APPENDIX

Biological data required for food additives, pesticides, veterinary drugs and additives to animal feed.

I. Acute toxicity.

1. LD₅₀ in at least 2 species of animals, oral administration, and other routes (dermal, parenteral and by inhalation), where indicated.
2. A description of the signs of toxicity.

II. Short-term toxicity.

1. At least 2 species, preferably rats and dogs.
2. Duration: 3 months.
3. At least 3 dose levels plus a control group.
4. Oral administration.
5. Observations: rate of growth, food consumption, general appearance and behavior, mortality, clinico-laboratory tests, organ weights, and gross and microscopic pathologic examinations.

III. Long-term toxicity.

1. At least 2 species, preferably rats and dogs, both sexes.
2. Duration: about 2 years.
3. At least 3 dose levels plus a control group. One or more of the doses should have no deleterious effect on the treated animals, and if possible one or more doses should be toxic.
4. Oral administration.
5. Observations: As in the short-term studies, clinico-laboratory tests should include blood, urine and organ functions. Comprehensive microscopic examinations should be carried out.

IV. Biochemical data.

1. In animals, and in man where possible.
2. Absorption, distribution, metabolic transformation, elimination and possible cumulation, as well as effects on certain enzymes.
3. Metabolism of pesticides in treated plants and metabolism of veterinary drugs and feed additives in treated animals. Acute and short-term toxicity data on the plant and animal metabolites in laboratory animals.

V. Reproduction studies.

1. At least 2 species, preferably rats and rabbits.
2. At least 2 dose levels plus a control group.
3. In the rat: The experiment should be carried out through 3 successive generations. Both the males and females should be treated for 60 days prior to co-habitation and throughout the gestational period. Preferably 2 litters per generation.
4. In the rabbit: The experiment should be carried through 1 or more litters. The females should be treated from day 8 to day 16 of the gestational period.
5. Oral administration, (parenteral administration for parenteral drugs).
6. Observations: a) In the parent—fertility, fetal resorption, length of gestational period, lactation, body weight, tumors. b) In the newborn—stillbirth, litter size, average fetal weight, congenital anomalies (gross examination, X-ray, alizarin staining), fetal sex ratio, 24-hour and 21-day survival rate.

VI. Other studies where indicated.

1. Adult hens for possible neurotoxic effects of organo-phosphorus compounds.
2. Dermal and mucosal irritation and sensitivity reactions in rabbits and guinea pigs.
3. Possible synergic effects between organo-phosphorous compounds.
4. Pharmacodynamic actions and suggested antidotes.
5. Neonatal studies.
 - a) Acute toxicity.
 - b) Biochemical studies.

Exemptions from long-term studies:

1. Those substances that have no residue in foods as shown by an adequately sensitive method.
2. Any substance which is closely related to another substance which has been studied chronically, and where all other studies (acute toxicity short-term toxicity and biochemical data) show that the two substances are essentially identical.
3. Veterinary drugs to be used in non-edible animals only.

Exemptions from reproduction studies:

As above, plus

4. Those substances that are known by biochemical studies to be normal, relatively non-toxic constituents or metabolites of food, (e.g. citric acid, ascorbic acid).

Miscellaneous notes:

1. Short-term studies may be exempted if the long-term studies are properly conducted with periodic *complete* examinations of some of the animals.
2. Parenteral drugs for veterinary use should be studied toxicologically by parenteral administration for twice as long as the recommended or anticipated length of use.
3. No tolerance will be established for
 - a. Antibiotics in meat
 - b. Any substance in eggs or milk
 - c. Any substance shown by an appropriate test to be carcinogenic or mutagenic.
4. Additional studies should be carried out where the preliminary results suggest that the compound tested *possibly* possesses a carcinogenic, mutagenic or any other serious undesirable action.

HOUSE OF COMMONS

First Session—Twenty-sixth Parliament

1963

SPECIAL COMMITTEE

ON

FOOD AND DRUGS

Chairman: Mr. HARRY HARLEY

MINUTES OF PROCEEDINGS AND EVIDENCE

No. 7

THURSDAY, OCTOBER 24, 1963

Statement by The Honourable J. R. Nicholson, Minister of Forestry

WITNESSES:

Dr. M. L. Prebble, Director of the Forest Entomology and Pathology Branch, and Dr. J. J. Fettes, Head of the Chemical Control Section, both of the Department of Forestry.

ROGER DUHAMEL, F.R.S.C.
QUEEN'S PRINTER AND CONTROLLER OF STATIONERY
OTTAWA, 1963

SPECIAL COMMITTEE ON FOOD AND DRUGS

Chairman: Mr. Harry Harley

Vice-Chairman: Mr. Rodger Mitchell

and Messrs.

Armstrong	Enns	Otto
Asselin (<i>Richmond-</i> <i>Wolfe</i>)	Fairweather	Pennell
Baldwin	Gauthier	Roxburgh
Basford	Howe (<i>Hamilton South</i>)	Rynard
Cashin	Macaluso	Valade
Casselman (Mrs.)	Marcoux	Whelan
Côté (<i>Longueuil</i>)	Nesbitt	Willoughby.—24
	Orlikow	

(Quorum 10)

Gabrielle Savard,
Clerk of the Committee.

Note: Mr. Otto replaced Mr. Francis after the sixth meeting.

ORDER OF REFERENCE

WEDNESDAY, October 23, 1963.

Ordered, That the name of Mr. Otto be substituted for that of Mr. Francis on the Special Committee on Food and Drugs.

Attest.

LEON J. RAYMOND,
The Clerk of the House.

MINUTES OF PROCEEDINGS

THURSDAY, October 24, 1963.

(7)

The Special Committee on Food and Drugs met this day at 9:45 a.m. The Chairman, Mr. Harry C. Harley, presided.

Members present: Messrs. Asselin (*Richmond-Wolfe*), Basford, Cashin, Harley, Howe (*Hamilton South*), Mitchell, Marcoux, Macaluso, Orlikow, Otto, Roxburgh, Rynard, Whelan and Willoughby—(14).

In attendance: The Honourable J. R. Nicholson, Minister of Forestry; Dr. D. R. Redmond, Director of the Forest Research Branch; Dr. M. L. Prebble, Director of the Forest Entomology and Pathology Branch; and Dr. J. J. Fettes, Head of the Chemical Control Section, all of the Department of Forestry.

The Chairman called the meeting to order and welcomed Mr. Otto, a new member of the Committee.

He introduced the Honourable Minister of Forestry who expressed the views of his department on the use of pesticides as an instrument in forest protection in Canada, and outlined some of the problems relating to fish and wildlife arising from such use. A copy of his statement was distributed to the members.

The Minister answered questions and informed the Committee that his officials were available to give information of technical or practical nature. He retired to attend a cabinet meeting.

Dr. Prebble and Dr. Fettes were examined particularly about the effects of spraying of the forests on the wildlife and the bird population, on the precautions taken in the spraying of pesticides, and the regulations governing the spraying of privately-owned forests.

Mr. Macaluso suggested that the Canadian officials of the Wildlife Service of the Department of Northern Affairs and National Resources be called before the Committee.

Mr. Basford requested that the Committee hear the Provincial Entomologist of Manitoba, and asked that the officials of the Food and Drug Directorate be recalled for further questioning.

Mr. Macaluso recommended that the subcommittee study certain changes in the hours of sittings.

At 11:45 a.m. the Committee adjourned to 9:30 Tuesday, October 29th.

Gabrielle Savard,
Clerk of the Committee.

EVIDENCE

THURSDAY, October 24, 1963.

The CHAIRMAN: Gentlemen, we now have a quorum and perhaps we could come to order.

First of all, I should like to welcome Mr. Otto as he is a new member.

As our witnesses for today we have the Minister of Forestry and his officials. I think without any delay, as the minister has to attend a cabinet meeting very shortly, we will ask him to present his brief.

Hon. JOHN R. NICHOLSON (*Minister of Forestry*): Thank you, Mr. Chairman.

Gentlemen, I would like to say at the outset that I am very pleased that this opportunity has been afforded to me and to officials of the Department of Forestry to express our views on the use of pesticides, more particularly the use of pesticides in the field of forest protection, and to think out loud for a few minutes about some of the problems that relate to fish and wildlife when insecticides are used.

As I said to you when we were walking over this morning, Mr. Chairman, it is a matter of special interest to me that your vice-chairman, Dr. Rynard and several other members of this special committee were also members of the special committee during the 25th parliament. As you will perhaps recall, not only was I a member of that committee in the former parliament but I was the one who suggested that they bring in the officials of the Department of Forestry to deal with the use of pesticides in the protection of the forests, and I suggested that the minister of the Department of Forestry should be placed near the head of the list, but little did I think that I would be the Minister of Forestry who would be dealing with this subject at the next parliament.

My reason for suggesting that officials of the Department of Forestry should be invited to discuss the use of pesticides and allied matters before a committee of the house was that I felt that parliament and the Canadian public should have more detailed information concerning the government's role in relation to the use of pesticides and the effect of such use on fish and wildlife that in turn might be consumed by human beings.

Having been associated with the forest industry for some little time before entering the political field and knowing full well that on occasions it is necessary to use pesticides for the protection of our forest resources, I felt strongly that at least some statements that had appeared in the books and periodicals bordered on hysteria and they might and perhaps would be refuted by those who had made a detailed study of the subject.

I considered it to be of the utmost importance that the Canadian public should be advised that government officials and agencies do not authorize or even encourage the use of insecticides without careful investigation. I believe that I am in a position to assure members of this committee that the federal government has not come to support the use of insecticides in forestry protection without adequate reason and without very thorough investigation.

I might say that I worked for approximately two years when I was with the forest industry in British Columbia and took an active part in the work of the joint committee that was set up by the federal Department of Forestry, the provincial department of lands and forests and the forest industry, to discuss this very problem. Large sections of the forest resources in British Columbia

were threatened with extinction from different bugs, and it was only as a last resort that recourse was had to insecticides. This was only done after very thorough investigation.

I have with me here today Dr. D. R. Redmond, director of the forest research branch of my Department, Dr. M. L. Prebble, director of the forest entomology and pathology branch, and Dr. J. J. Fettes, head of our chemical control section. These gentlemen and other experts in government service, in the field of forest insects and forest diseases, are available and they will be made available to you on request, if you feel their advice or their knowledge might be of assistance to you.

I have prepared a memorandum with the help of these experts, and copies of it have been distributed. In the interest of time, and because some technical expressions appear periodically, I had better stick very closely to the notes.

Forest insects and diseases are among the foremost problems affecting the forest nations of the world today. In Canada, forest losses due to insects and diseases have been particularly heavy. This is partly because foreign insects and fungi have flourished here but largely because relatively few species of mature and over-mature forest stands are completely immune from the attacks of forest pests. Losses from such causes have been particularly heavy in Canada since the beginning of the present century.

You will appreciate that with limited resources in parts of the world, in western Europe, in countries such as Germany and Sweden, you find a continuous cutting down of trees. These countries have been using scientific methods, while Canada, being a new country, has stands of timber in different parts of the country that are several hundred years old. The over-mature forest is the one that is particularly susceptible to forest insects and fungi.

While losses of this nature might be tolerated in the early stages of development of Canada's forest industry when we had a huge surplus of the forest resource, losses of that magnitude would be very damaging to the Canadian economy and they certainly should not be tolerated today.

About six weeks ago I visited Newfoundland at the request of the Newfoundland government with several senior officers of my department, one of whom is here with me today. We went there because of a forest insect that was doing damage. It is called the woolly aphid, it is a tiny little thing. It does not seem to be worth bothering about until you see it under a microscope and you see some of the damage it is doing.

Practically one-half of the soft wood forests of western Newfoundland have been hit by this insect. I am sorry to say that we have not found an insecticide yet which can take care of that particular insect. It is called the woolly aphid. It is covered with a little coat of wool, and try as we might, we have not yet found an insecticide which can take care of that particular little insect. But the problem is being studied, and we have some of our best men in Newfoundland working on it.

But with the high capital investments we have in forest improvements today and in manufacturing plants, more particularly, and the keen competition afforded by the forest industries of other countries, we must offer the highest productivity and the best manufacturing efficiency that we can get if our industry is to compete with Finland, Sweden, and those other countries.

Because of the seriousness of the problem, studies of forest pests in Canada were initiated over 50 years ago and there has been a steady progressive development right up to the present time. These studies were started by the Department of Agriculture in 1912 and they have continued without interruption. They were working on forest insects, and the Department of Agriculture was working on plant insects, such as the potato bug and the other things which were of concern to the Department of Agriculture. But they have continued without interruption. The function, staff and facilities of the forestry

division of the Department of Agriculture were transferred on masse to the new department in 1960, that is, to the new Department of Forestry. Some of our best research men are continually engaged in this important work.

It may be of interest to you to know that we have selected 11 regional research survey establishment for the study of forest pest problems in Canada, and these are distributed at strategic locations from Newfoundland to British Columbia. The department also maintains a special establishment for studies in insect pathology and for chemical control of these insects on a national basis; that is a national study.

From the very beginning, solution of forest pest problems has been sought through the use of biological control agents, such as parasites, predators and pathogenic micro-organisms, to regulate the numbers of destructive species of forest insects. We have also used modified cultural practices to reduce the severity of losses caused by insects and fungi.

I think it will be a matter of interest to you, and a matter of pride and satisfaction to know that nowhere in the world—and this is recognized—nowhere in the world has biological control been employed as extensively or as successfully against forest pest species as in Canada. This is a recognized and accepted fact by all countries of the world. This method of biological control has proved successful principally against certain foreign pests, that have been brought into this country. But recently, as a result of extensive work, some encouraging results have been obtained against native pest species by using pathogenic micro-organisms. On the other hand, as I said at the outset of my remarks, manipulations of biological control agents have so far proved quite ineffective against a number of the most destructive forest insects, and as a consequence the federal government has strongly supported provincial governments and the forest industry generally in carefully planned programs to reduce this hazard by use of insecticides distributed by aircraft. Admittedly there have been errors in judgment at times, particularly when these insecticides were being tried out in the early stages, but I am reliably informed that such use of sprays is by no means a reckless or hazard undertaking, and the three gentlemen who are with me will verify this. It is absolutely necessary for the protection of this resource that is so important to Canada.

The Department of Forestry contributes to these programs in the following ways. Through our forest insect and disease survey, we carry out continuing surveys of forest pest populations throughout Canada. Instances of rising populations and the development of injury are reported promptly to the provincial departments and to industry. The results are published annually for Canada as a whole.

You will be interested to know, I am sure, that within the last six months as a result of these surveys we had information that there was a very serious infestation in the province of British Columbia, and within a matter of days the federal government, the provincial government and industry sat down and worked out a program. There was no definite arrangement as to how the costs were to be paid. The possibilities are that it will be split three ways and that industry will pay a third, and each of the governments will pay a third. Within six weeks this great threat was met and answered. If we had been able to do that same thing with the woolly aphid in New Brunswick and Newfoundland we would have saved this country tens of millions of dollars.

Another way in which we contribute in biological studies which are conducted concurrently, either by the survey organization or by special investigation teams working out of our regional forest entomology and pathology laboratories. That is how we worked in Newfoundland. We had a team from the mainland which went to the island province to work with the men who were on the ground there. These studies lead, among other things, to forecasts of

population trends, the prospects of control of the pest species by natural factors, and the development of hazard to the forest resulting from continuing attacks in successive years. We have a fairly accurate estimate of what will happen if this balsam woolly aphid is not checked. The present indications in regard to the damage done and continuing in Newfoundland are that they will have to accelerate logging of that particular area and get the wood out within a matter of two or three years, perhaps five years. If we do not find an insecticide that will kill this particular insect we will have to consider planting another type of wood in that area. In other words, instead of the balsam fir which is the natural habitat of the woolly aphid, we may have to swing over to spruce or pine.

The third way in which we contribute is by critical studies of insecticides as a means of controlling damage by destructive forest insects. These are undertaken by our chemical control section, and Dr. Fettes who controls that section is here with us today.

This section, located in Ottawa, carries out comprehensive studies in the laboratory and in the field, using the more promising insecticides developed for use against agricultural pests. We start out with something that has proved to be successful in the agricultural field and gradually put it into use in the forest section of the economy. The chemical control section is particularly concerned with the minimal effect of concentrations and dosages, methods of application, assessment of deposit rate, dosage-mortality relationships, and the intensity of mortality in field populations. As I say, this work has been going on for over fifty years, and I wonder if Dr. Rachel Carson ever realized that fact when she wrote her book.

Technical advisory services are provided to provincial forestry departments and to industry in the appraisal of dangerous outbreaks and the development of control projects to avert or lessen damage to the forest. It was this technical advisory service which was brought into play in British Columbia for the outbreak to which I referred which took place earlier this year.

The officers of my department take a cautious attitude toward the use of insecticides. Eradication is not the objective, rather it is forest protection through population reduction in those parts of major infestations where the forest, as a result of successive attacks, is in a hazardous condition. Minimal effective dosages are recommended, and when there is a choice an insecticide least likely to be hazardous to fish and wildlife is used; and I think this is important.

When control projects are developed by the provinces or industry, officers of the federal Department of Forestry carry out related biological and population studies, assessing the short-term and longer-term results as far as the insects and the trees are concerned. These results are published and widely distributed not only in Canada but to forest services of other countries, and certainly of the United Nations.

All projects of any magnitude are reviewed annually by an interdepartmental committee on forest spraying operations, comprised of representatives of the Department of Forestry, the Department of Fisheries and the Canadian wildlife service. This interdepartmental committee has been functioning since 1958, and has promoted cooperative research by forestry and fisheries scientists, principally with respect to insecticidal formulations and dosages. The field in which we have had greatest success is in the use of insecticides to meet the threat of the spruce budworm in the Atlantic provinces. We have also had success in other parts of Canada. Unfortunately, in the early stages the insecticides did have some injurious effect on the fish populations. Recommendations of the interdepartmental committee have been incorporated in the large scale operations against the budworm in New Brunswick. That work is still going on but the recommended techniques, minimal dosages and other things

are now being used, and I think it is gratifying to note that there have been more salmon in the rivers this year than at any time in sixty years. So the problem we were worried about two years ago does not seem to be a continuing one.

As I mentioned earlier, in certain large projects costs are shared by the provinces and industry, and the federal department has been contributing where there have been major outbreaks. We have been contributing costs to the extent of one-third.

I will conclude my opening remarks by saying frankly that it is the considered opinion of the scientists in the Department of Forestry, after discussion with their colleagues in Finland, Sweden, the United States and other forestry nations, that pesticides are not a panacea for all forest pest problems, and the woolly aphid is the classic example in Canada.

Short-term injury to salmon populations in New Brunswick and British Columbia did result from aerial sprays directed against forest defoliators. There has been comparatively little study of wildlife populations in sprayed forests of Canada; in fact, the real consequences of such treatments on wildlife populations is urgently in need of study. Officers of the Department of Forestry will continue to carry on their fundamental population studies of destructive pest species, the potentialities of biological and other non-chemical means of control and critical studies of insecticides in the expectation that they will be needed for emergency action from time to time.

I mentioned earlier that they are encouraged by some of the very recent results that have been attained in this field and the critical studies and so on.

Since it is probable that insecticides will continue to be used over forested areas in the future, we would like to see much more intensive studies carried out by the Department of Fisheries and by the Canadian wildlife service on the short-term and long-term impact of insecticides on populations of important fish and wildlife species. To this end officers of my department will be very pleased to continue joint investigations of the type initiated in 1958. It seems to us also to be important that thorough investigations should be continued and expanded relative to possible hazards to food-chains involving fish, birds, mammals, including man, that might result from aerial dispersal of insecticides over forested areas.

As you will appreciate, in spraying forests a worm, or something else, is able to partake of the pesticide, the worm is then eaten by the woodcock or the partridge and we in turn eat the partridge. There is much more work that can be done in that field, and our department is only too willing to play its part in this way. Thank you gentlemen.

The CHAIRMAN: Are there any members of the committee who would like to direct a general question to the minister before he leaves?

Mr. NICHOLSON: My colleagues will be here to answer any questions of a technical or practical nature.

Mr. WHELAN: Could I ask the minister the following question? In his preliminary remarks he said that he demanded that the forest department appear before the food and drugs committee. Is he satisfied now that their operation is a good operation?

Mr. NICHOLSON: Yes, I am. I knew something about the practice of the federal Department of Forestry in this particular field long before I became associated with the department. However, as a result of a closer association with the officials in this field, I must say I think they are making a very important contribution.

Mr. WHELAN: You feel then, sir, and I notice from the comments in your brief, that there is undue alarm being created by some over the use of these in forestry?

Mr. NICHOLSON: Yes, I think there is a tendency to that when you get some spectacular case. I remember a case I discussed with you a few days ago. It has been referred to in magazines and periodicals. That was not work done by the Department of Forestry nor was it work done by the Department of Agriculture; it was a spraying operation that was carried on by the provincial services in some branch of the provincial government in Victoria. They were spraying to overcome the mosquito threat, and through the spray from mosquitoes damage was done to one dog. That animal was a pet of a particular person. The single incident was magnified away out of proportion to the good that came from the use of the insecticide. Although I do not like to refer too often to one book, I have read and re-read parts of Rachel Carson's book. It is a thought-provoking book. On the other hand, I cannot help but feel it is overdone, glorified and magnified to make a public appeal. There is a certain amount of hysteria.

Mr. ORLIKOW: Mr. Chairman, without debating the relative merits of a particular book and without relating this to a particular department, I do not think the public really cares which department has the responsibility or which department makes mistakes. It is certainly obvious, and you do not have to just read Rachel Carson, that mistakes have been made and that all of the government departments and all of industry are re-thinking their position. In yesterday's Ottawa paper there was a report that the Manitoba Department of Agriculture yesterday or the day before banned the use of two insecticides. I presume they were approved by federal authority. They have been used in Manitoba. One is called Dieldrin and the other is Aldrin. Obviously—I am not saying that the Department of Agriculture was careless or that they did not do enough research—they did not know enough about the effects of these two particular products. I do not want to be critical of the minister or his department but every time I have been present at these meetings, and I must admit I missed a number of them, we have every department saying that this is all exaggerated and that people are too excited. However, I see that they are all pulling in their horns. They should say that this is a tremendously complex problem and that they should weigh the benefits that we get by using these protective devices against the harmful effects which have been discovered later, and keep re-assessing our position. This would be a more defensible position. Every minister I have heard says the same thing, that everything is all right and that all the things that happened before that were accidents. They say "we have learned more and they will not happen again". They darn well will happen again in some cases. Why do we not say so and why do we not say we are going to do more to avoid them in the future?

Mr. NICHOLSON: With respect, Mr. Orlikow may have come in later but I made that remark at the beginning of my little speech.

Mr. ORLIKOW: Every minister does that.

Mr. NICHOLSON: And I wound up on that note. Read the last paragraph.

Mr. ORLIKOW: I have read it several times.

Mr. NICHOLSON: I said that you have to weigh the necessity or the desirability of using the pest weapon against protection of the resource. Mistakes do occur. We try to avoid them.

Mr. ORLIKOW: But I have the feeling that the particular department is interested, and this is natural, in the resources they are instructed to protect; in other words a forest department is primarily interested in the forest and if there is injury to fish and wildlife, that comes out later, and another department will be interested in the agricultural products and so on. I cannot but feel that there is no real co-ordination there.

Mr. NICHOLSON: We say quite frequently that since the use of insecticides on a large scale seems to be an economic necessity, so far as we are concerned we would welcome the most intensive studies on the effects of any insecticides, even in minimal doses. We would welcome the most intensive studies by any branch of either the wildlife service or the Department of Fisheries or the Department of Agriculture, and we would be glad to co-operate with them. That is all we can do. At least I do not think we can do more.

If you can suggest something, by all means please put your suggestions forward.

The CHAIRMAN: No, Dr. Rynard.

Mr. RYNARD: Mr. Chairman, first of all I think we should thank the minister for bringing us this brief. After all, his is a comparatively new department. In reading the brief I am impressed to find that he does realize that there are a great many problems which can only be worked out through the trial and error method. I think we all appreciate the minister's brief and what he has said.

Now, if we may get on with the business of the committee, I would like to talk to the appropriate departmental official and to ask this question of the right gentleman, whoever he is.

With our over mature forests, have we planned a campaign for attack upon harmful insects or pests therein? Are we planning any campaign to eradicate those forests which may come into the position of being breeding grounds?

The CHAIRMAN: Before an answer is given to your question, may we at this time excuse the minister who has to leave for a cabinet meeting, for which I know he is already late.

Mr. NICHOLSON: Thank you, Mr. Chairman, I leave you in good hands.

Dr. M. L. PREBBLE (*Director of the Forest Entomology and Pathology Branch, Department of Forestry*): In answer to your question I think it is fair to say that all the provinces are developing long-range plans along the lines you have suggested, and we are assuming that all the problems will become diminished with the passage of time simply with the improved use and management of forestry resources.

Mr. RYNARD: Is this new department of lands and forests under your department?

Mr. PREBBLE: The administration rests with the provinces, but we offer them technical advice in the field of forest management. However the actual administration rests with the province.

Mr. RYNARD: Is it the province which makes the survey of these particular over-aged forests, or points out when the forest should be cut?

Mr. PREBBLE: Yes, the province makes the inventories, while we carry on a census of the insects in those forests.

Mr. RYNARD: Is there any legal compulsion that they cut a forest when it has matured and become a breeding ground?

Mr. PREBBLE: Some of the provinces have legislation requiring the operator of a forest to take action for the diminution or removal of insects, but that is an arrangement made with the provincial forestry department and the operator of the forest.

Mr. RYNARD: Has there been any survey made to indicate how many birds have been destroyed, or what percentage of birds have been destroyed in some of those forests?

Mr. PREBBLE: I think the best answer to that is in New Brunswick, where we have had quite an intensive investigation in the northern part of the province, continuously since 1944, actually, before the development of the budworm population, the forestry department study group has been concerned with birds as well as insects on the trees. Certain birds respond to an increase in the number of budworms; that is, they tend to increase in number as there is more food. Then a concurrent decrease of other bird species would come about as a result of competition. That again is quite incidental to any spraying operation.

As spraying operations take place the budworm population are reduced. I will point out that in the natural forests, certain bird species will respond numerically to an increase in their food supply and become more abundant. Other species however, if they are not able to compete, decline. But the total population will remain high in areas with a high budworm population. Even when spraying is undertaken, the forest will not be deprived of birds.

Mr. RYNARD: You have stated an indirect effect. Now, what about a direct effect from spraying and poisoning of birds?

Mr. PREBBLE: We have had these crews working throughout the forest taking a census of birds for 19 years now, and we have not noticed many birds dead. However, there have been a few. That is an indirect effect.

The only direct evidence we can give is that when we have had some heavy frost in the spring, dead birds have been found after these heavy frosts.

We feel that bird life, speaking primarily of warblers, has not been greatly affected by insecticides and sprays. They may have been affected by the lack of or the abundance of food as the case may be.

Mr. RYNARD: So we can conclude that there is no direct effect from spraying on the bird population, but there is an indirect effect by its effect on food?

Mr. PREBBLE: If there is direct effect, it is not catastrophic by any means.

Mr. RYNARD: If there is direct effect to any extent are you getting into a position where the insects that have been observed were destroyed, or were left to run free? Is the position you are in such that it is better to let the birds go ahead, and to continue to spray even though it does destroy some of the birds?

Mr. PREBBLE: Perhaps I might make it clearer by saying that the spraying that has been done in New Brunswick has been done on a very cautious basis. At no time was the whole infestation sprayed. About 40 per cent of the infested area was sprayed in an exceptional year, although it is normally from 15 to 20 per cent, and the actual selection of areas for spraying has not been haphazard. Those areas in danger of imminent death have been sprayed. Consequently at no time in the last 11 years has the infested area as a whole been sprayed. Consequently with birds, which are a moving population—if there has been a direct effect, it is clearly not detectable in the smaller bird population.

Mr. RYNARD: In those areas where you have found any disease to the forest, such as diseased trees, have you any authority to go in and cut those trees rather than to let them spread? What are the preventive measures there?

Mr. PREBBLE: The most common form of disease in trees—especially in mature trees—is heart rot. You get a column of rot starting at the base of the tree and it eventually comes up into the stem. It is a natural phenomenon associated with increasing age.

Most provincial departments are anxious to use the material before it becomes undesirable or worthless. In the case of the utilization of forests suffering from the hazards of old age, it rests entirely upon the provincial

administration to encourage the use of them in the early stages. The only authority which exists with reference to the destruction of diseased trees comes under the regulations which are inherent in the Destructive Insect and Pest Act. Where it is an introduced disease brought in from abroad accidentally, the administrators of this act have the authority to cause the removal of the agents of infection.

Mr. RYNARD: Let us consider a typical case. Let us suppose we have discovered a disease in Ontario that is affecting elms, or spruce, or whatever the case may be. What authority do you have to go in and stop that spraying in a forest?

Mr. PREBBLE: The only authority that exists on a national basis is the authority vested in the plant protection division through the regulations of the Destructive Insect and Pest Act.

Mr. RYNARD: We do not have any authority to date such as we have in respect of infectious diseases.

Mr. PREBBLE: They have an authority and it has been used; that is, the Destructive Insect and Pest Act. But this has to be in respect of an introduced disease and not a native disease, something brought into Canada accidentally from abroad.

Mr. RYNARD: In other words, you cannot apply it to a native disease?

Mr. PREBBLE: No.

Mr. RYNARD: Therefore there is no protection.

Mr. PREBBLE: A native disease is not made more hazardous by being in one place now and in another place five years earlier or five years later. It becomes a question of administration through normal channels.

Mr. RYNARD: I am thinking of the elm tree. We have pretty well let that disease spread all over. I do not think we have done anything about it yet.

Mr. PREBBLE: There was a great deal done about this in the province of Quebec in the early years, and also in southern Ontario in the early years, but the action taken was not capable of stemming the infestation.

Mr. RYNARD: I did not see anything done in our area.

Mr. PREBBLE: A great deal was done along the St. Lawrence river in the vicinity of Sorel and Montreal; also around Windsor, Toronto, Hamilton and the Niagara park area.

Mr. RYNARD: It was sporadic; it did not go all over the province.

Mr. PREBBLE: No.

Mr. MACALUSO: Mr. Chairman, in respect of insecticides and pesticides, the greatest danger I see is from aerial spraying. I think this pretty well has been admitted by the minister in his brief, and by the department. I would like to ask what precautions are being taken in respect of aerial spraying? When a section of a forest is being sprayed to get rid of some pest, what precautions are taken in the spraying operation itself? I think the greatest danger is in the carriage of a pesticide a few hundred miles away, which could cause damage to man and fish some distance away from the actual area sprayed. What precautions are taken either by the provincial government involved, or others, in respect of aerial spraying, for instance, on crown lands? I realize this is a pretty general question.

Mr. PREBBLE: Yes; it is. Let me sketch out some of the action that is taken and then you probably can pinpoint your question a bit more.

First of all, the hazard to the forest has to be defined. It has to be a serious hazard before the Department of Forestry recommends or concurs in a recommendation for spraying.

Secondly, the materials used on a commercial scale are all registered materials that have been in agricultural use—materials which already have been cleared for use on agricultural products. In other words, there are no commercial spraying operations on forests in Canada where insecticides are used which have not already been used on agricultural crops.

Thirdly, the dosages are kept to the minimum dosage which is thought to be effective in controlling the pest. Usually they are quite small dosages, a fraction of a pound per acre.

Fourthly, the design of the actual flying is worked out carefully so that the aircraft is where it is supposed to be, and not as you suggested, a hundred miles away.

Mr. MACALUSO: I was not referring to the aircraft, but rather the wind velocity which is a danger.

Mr. PREBBLE: Fifthly, the conditions under which the spraying is to be done are well defined. You do not want still air and you do not want hurricanes. Spraying is usually confined to a few hours a day when the conditions are suitable for the spraying. It is important that the spray from the aircraft should go down and not up. The actual aircraft which is in operation is under observation by a spotting aircraft or other means of control. In spite of all this, hazards do occur, of course.

Mr. MACALUSO: This is what I am referring to. No matter what precautions are taken, there is always the problem of spray applied by aircraft being blown some miles away. I think it is impossible to say that there is no danger of any of the spray being carried away by means of wind velocity.

Mr. PREBBLE: Yes.

Mr. MACALUSO: You have mentioned that any pesticide that may be used in a spraying operation by an aircraft has already been tested and used in respect of agricultural production. However, the mere fact that a pesticide has been used and tested on agricultural products does not necessarily mean it would not have some harmful effect or cause a danger to the forests.

Mr. PREBBLE: Not all agricultural insecticides are used in forestry. The ones used in forestry are selected from among them. As a matter of fact, very few have been used in forestry.

Mr. MACALUSO: Perhaps I misunderstood you when you said that any pesticide used is registered and has been used first on agricultural products.

Mr. PREBBLE: That is right; but only a few of those which are capable of being used in agriculture can be used in forestry because the dosage used in forestry is usually in the nature of one-quarter pound to a half pound in a gallon per acre. The materials used in agriculture are used in much greater volumes. We must have something which is capable of being used over a large area, but with a low volume, and this limits it to a few.

Mr. MACALUSO: Suppose I have a private tract of land and want to spray it, must I first go to the research centre in my locale and ask permission to spray, or can I go ahead on my own, charter a plane or a spray operator, and have my tract of land sprayed?

Mr. PREBBLE: So far as I know there are only two limitations. If you live in Ontario, and if there is a danger of putting an insecticide into water, you need clearance through the Ontario Water Resources Commission. You might have water flowing through the forest. That is one of the limitations of which I know. On the other hand, if you reside anywhere in Canada, you expose yourself to the regulations under the Fisheries Act if you want to put insecticide in water. I believe you would have to clear with them. I do not know of any other provincial authority other than that of Ontario which would govern your activities.

Mr. MACALUSO: In other words, a private owner of forest land is pretty well free to charter a private operator and have him spray a tract of land.

Mr. PREBBLE: Yes.

Mr. MACALUSO: And there is no really strong restriction by the provincial people; for instance, the water resources people in Ontario?

Mr. PREBBLE: Yes, and under the Canadian Fisheries Act.

Mr. MACALUSO: Do you feel you require more strict regulation by the provincial or federal authorities where there is private ownership of a tract of forest land?

Mr. PREBBLE: Most of the private applications of which we are aware are with regard to very small areas, mostly a few acres; many are plantations and sand areas. I do not think it is a hazard to the population of Canada. If a private owner was in an area where there were important fish streams or lakes, it might be a serious situation. However, private spray applications in Canada are trivial.

Mr. MACALUSO: The application might endanger wildlife and fish in the area.

Mr. PREBBLE: Yes, that is true.

Mr. WHELAN: I think the way this is going on the record it would appear that some of the provinces do not have laws against this. I read in the *Family Herald* the other day where a British Columbia airline pilot was fined \$500 for spraying for some organization. They do have laws in this regard.

Mr. BASFORD: That was a prosecution under the Fisheries Act.

Mr. WHELAN: It does not matter what it is under.

Mr. MACALUSO: In the spraying of the forests, are there any oil pesticides which may be used? I understand the oil industry does provide pesticides which are non-poisonous and poisonous. Do the people involved in forestry use any oil pesticide, either poisonous or non-poisonous, in the spraying operations?

Mr. FETTES: The oil companies are active in the pesticide field, but when you say oil pesticide perhaps you mean oil carriers of pesticides.

Mr. MACALUSO: No. There is an oil pesticide which is produced by the oil industry. It is useful in spraying. It is useful, for instance, in keeping down the mosquito larvae. Is there a type of oil pesticide used in the forestry industry?

Mr. FETTES: Most of the pesticides used in the forest are carried in an oil diluent.

Mr. BASFORD: I think there was mention of this pesticide in the last issue of the *Imperial Oil News*. I believe it is an oil for the control of mosquitoes.

Mr. FETTES: Oil itself has been very good in the control of mosquito larvae, and the insecticide in that will also kill the mosquitoes that are further down in the water. A film of oil on the water will suffocate mosquitoes, so oil is the best carrier of insecticide for immature mosquito control.

Mr. MACALUSO: Is there an oil pesticide used in spraying in the forestry industry?

Mr. FETTES: The answer is no. I am not sure that I know what you mean by an oil pesticide.

Mr. MACALUSO: In the spraying of some hazard to the forestry industry, is there a pesticide which does contain an oil component?

Mr. FETTES: The formulations do contain an oil component.

Mr. ROXBURGH: I do not know whether this is a practice in respect of forests because it would require a considerable amount of oil, but in the spraying of fruit trees we use a straight emulsified oil spray for the control of scale,

and that sort of thing, without any insecticide in it at all. It kills only the insect and not birds or anything else. I think perhaps this is what Mr. Macaluso has in mind; that is, straight oil rather than an insecticide.

Mr. FETTES: You are speaking of dormant oils?

Mr. ROXBURGH: Yes. Has the forestry industry done anything with that? Would it be practical to do it because of the amounts which would be required?

Mr. FETTES: Having in mind the problems we have in forestry, I would think not. In the first place, you need large volumes of dormant oil for scale and aphids.

Mr. ROXBURGH: I was wondering about the woolly aphids to which the minister made reference this morning. The woolly aphids in fruit trees must be a different form of life from those in the forests, or is the difference that we have been able to control it on the fruit trees?

Mr. FETTES: Let me ask you a question. Could you control the scale or the aphids in your orchard if I restricted you to one gallon per acre?

Mr. ROXBURGH: No.

Mr. FETTES: We naturally restrict it because of the payload of aircraft and so on. As I say, we restrict it to a very small volume of material per acre.

Mr. ROXBURGH: That is what I was getting at.

Mr. OTTO: I would like to direct a question I have to either one of the three gentlemen at the head table. It is presumed that our long range concern in this committee is going to be the persistent type of pesticide, which probably was the issue raised in Rachel Carson's book. You have told us how much co-operation there is between our government agencies and those of the United States government agencies in connection with the control or the use of these persistent pesticides, but, since our waters do flow across the border and our wild-life crosses both ways, how much co-operation is there, in fact, between either the individual states or between the United States federal government and our government in this connection?

Mr. PREBBLE: In the field of pesticides we have very good co-operation. For many years we have had this co-operation on an informal basis. However, during the last two years we have had it on a formal basis through the North American Forestry Commission, which is an agency of the Food and Agricultural Organization. As I say, we have received the fullest co-operation in this connection. It is of special concern to the two countries when it happens to concern a matter which is near the international border. There is an exchange of information mostly and a discussion on the hazards involved, the best possible approaches to them, and so on. Occasionally there have been collaboration programs on a rather small scale which involves the same pest species on either side of the international border.

Cases occurred last year in New Brunswick and Maine, and these have been duplicated during the past ten years, at which times the same organization handled the dispersal of insecticides on both sides of the border. We already have done work on behalf of the United States people in our chemical control section. We have carried out trials, the results of which they have used. Ten or twelve years ago the reverse situation applied, where we received quite a bit of information from them. However, as I said, it is mostly an exchange of information.

Mr. OTTO: For example, are the same pesticides controlled to the same extent. Is the concentration used the same on both sides of the border or is there a pesticide which is prohibited or controlled in Canada which is not prohibited or controlled in the United States?

Mr. PREBBLE: I think I will start answering that question and I may later on throw it over to Mr. Fettes.

In 1963 the same pesticide was used in New Brunswick and in Maine, but in Maine it was applied at about three to four times the dosage which was applied in New Brunswick.

Mr. OTTO: Do you mean it was applied three to four times the dosage per acre?

Mr. PREBBLE: Yes.

Mr. OTTO: And, in the opinion of your department, when you say three or four times, was that concentration too much or was it within the safety limit?

Mr. PREBBLE: They felt they could do so without raising hazards to the fish and wildlife population.

Mr. OTTO: But did you feel the same way?

Mr. PREBBLE: Within the last few years we never have felt that it has been necessary in the control of budworm. The difficulty is to kill the budworm without killing the fish. The reason for the reduction in Canada was to make it possible for fisheries and forestry to live together.

Mr. OTTO: In your opinion, was the dosage the Canadians used in New Brunswick sufficient?

Mr. PREBBLE: It was sufficient to keep trees alive with a minimum damage to the fish.

Mr. OTTO: But the Americans used three or four times the quantity in Maine; in your opinion, was that injurious to the fish?

Mr. PREBBLE: We have not heard the results of that.

Mr. OTTO: But I asked if, in your opinion, it was injurious to the fish?

Mr. PREBBLE: We have not been in the United States. However, the official responsible for the program in the United States said they had learned of no untoward incidents as a result of the operation in Maine this year.

The CHAIRMAN: Have you a question, Mr. Willoughby?

Mr. WILLOUGHBY: I believe my questions have been answered, Mr. Chairman. I was going to ask what effect the pesticides had on our fish. But, as I said, that question already has been answered satisfactorily.

The CHAIRMAN: Have you a question, Mr. Cashin?

Mr. CASHIN: Did I understand you correctly to say that spraying was not done by private groups? I am thinking of the paper companies who have large tracts of land over which they have certain timber rights. Do they not engage in this type of spraying themselves in certain areas, or is it completely a provincial matter? Is it the provincial or federal responsibility solely or do these paper companies conduct their own spraying operations?

Mr. PREBBLE: There are two kinds of spraying done. Private paper companies have used materials to combat mosquitoes and black flies in their cutting operations, which is a private affair; but when it comes to controlling forest pest species I think, almost without exception, it has been a joint enterprise involving several companies and the provincial government, as well as the federal government occasionally, financially. However, almost without exception, I think it has involved our department on the technical side.

Mr. CASHIN: You mentioned an example of the paper companies doing the spraying themselves. In that case is it subject to the same control, the same precautions and so on that would be taken?

Mr. PREBBLE: For black fly control?

Mr. CASHIN: Yes.

Mr. PREBBLE: I think that probably is a unilateral action. We have not been involved in black fly control operations in Canada.

Mr. CASHIN: What about the provincial governments?

Mr. PREBBLE: They are still subject to the requirements of the Fisheries Act if they are spraying for black fly and mosquito control.

Mr. OTTO: If I may ask one question at this point, would it be possible for your department to function and to control any dangerous diseases and so on even at a greater cost without the use of persistent pesticides?

Mr. FETTES: Yes. First of all, I think we need a definition for persistent. I would put words in your mouth by saying you are thinking of D.D.T. on the one hand, which is persistent, and others that may not be so persistent. For the last three or four years we have been working with materials that are not persistent and we have been fortunate enough to discover one or two of these which are effective against budworm. One of them has been used operationally in New Brunswick during 1963. These materials, which are systemics, already have been tested by the Department of Fisheries in connection with the tolerance of young salmon to concentrations of these materials in the water, and the story from the Department of Fisheries has been that at least two of these materials are less than 1/100 as toxic to fish as D.D.T. We have been experimenting in the field with this material. Actually, the material phosphamidon has been used along waterways and streams in connection with an experimental project in New Brunswick. I believe I said before that it was used operationally; that is not correct. But, as I say, the experimental project this year met with considerable success. But, this material is many times more expensive than D.D.T., and it would then become an economics problem.

Mr. OTTO: My question is: Would it be possible for your department to carry on this work regardless of cost without the use of the persistent pesticides—and, of course, when I say “regardless of cost” I am referring to costs in reasonable terms. As I said, would it be possible for your department to carry on this work now without the use of persistent pesticides or insecticides?

Mr. FETTES: Well, I would say when large tracts of forest are in real danger we must use the best tools we have and, in some cases, the best tools we have are the persistent insecticides.

Now, I can see in the future possibly that most of the persistent insecticides would disappear from not only forestry but agriculture. I think possibly the answer to your question would be in the affirmative.

Mr. MACALUSO: What type of cooperation is there between the Department of Forestry or, to put it in a better way, what lines of communication are there between the Department of Forestry and the individual departments of forestry in each province. I would imagine that the only time the Department of Forestry would come in is if the respective provinces asked for assistance. Am I right in that assumption, or would you move into the field?

Mr. PREBBLE: Not at all. We have had our regional establishments in all the provinces with the exception of Prince Edward Island for many years. However, the survey programs are cooperative between the federal government and the provincial departments. The provincial departments contribute to the surveys and research projects, and information is passed back and forth almost on a daily basis. Many of our research projects are co-operative ones. We could not do them without their co-operation. If some situation is considered hazardous it is known within one or two days and there is a report within a week, and we might have a consultation almost immediately on what the hazard is and what can be done about it. So, the communication is as close as the

communication in this room. We do not wait to be asked to say what has gone on this year.

Mr. MACALUSO: I did not mean that you would not move in until you were asked. What I mean is if a provincial department found a hazardous situation would they immediately get in touch with your department or would it be the federal research centre in that province?

Mr. PREBBLE: They probably would be on the telephone within half an hour or less.

Mr. MACALUSO: How far advanced in your department are you in connection with biological studies to combat pests in the forest industry? I think this can be tied in with Mr. Otto's question whether in the future there is a possibility of doing away with pesticides in the forest industry. My question now is; how far advanced is the Department of Forestry in its biological studies and what tests have been taking place in the field. Also, are there certain areas or certain hazards which will be combated solely by biological development or useful insects?

Mr. PREBBLE: You have to make a distinction between native pests and foreign ones. Most of our native pests have no lack of actual control agents working against them. In the case of the budworm we have a list of something like 70 native species of parasites which attack it. There is a range of diseases caused by micro-organisms and things of this nature which regulates populations and keeps them from becoming destructive. The same is true of several other native species. On the other hand, we have native species which we think we can combat by manipulating some of the micro-organisms that attack them. We have had encouraging results the last few years with some native pine sawflies in eastern Canada, and there have been other encouraging results. I think some of these species can be regulated in times of high population by using the natural control agents already present in Canada. By and large, the prosecution of successful control of pest species through the use of biological control agents applies to those introduced and brought in from abroad. Most of the introduced species from abroad are not causing trouble in the areas from which they are introduced. This means that we go to their native home environment for control agents. That is the basis of most of our biological control program in Canada.

Mr. MACALUSO: Once the foreign agents are introduced and you find through biological research in respect of the parasite that you are combating it, how do you introduce it? Do you do this by aerial drop?

Mr. PREBBLE: No. To start with you usually do not have such great numbers. You usually have scores, hundreds or thousands, but you put those out in a carefully located area and watch them disperse. Only in one or two cases in the past have quantities been brought in such numbers that you could throw them out by air.

Mr. OTTO: We have already had an example, in the maritime unions, of one pest being brought in to control another. We do not want to have this happen again.

Mr. MACALUSO: From reading the minister's brief, which I gather was prepared jointly by you gentlemen, my personal opinion is that the department does not feel that enough has been done in respect of testing pesticides, and in the control of pesticides, not only in the forestry industry but in many other industries, as to their effect on fish, wildlife, birds and men. Although there is an interdepartmental committee which has been set up in respect of forest spraying operations and its effects on fish, wildlife and man, I gather from reading your brief that enough has not been done and that more should be done.

I am just wondering what recommendations you would have in this field, and what more can be done in the matter of testing and endeavouring to control the dangerous effects on man, fish, wildlife, and so on.

Mr. PREBBLE: As stated in the minister's statement, the real consequences in respect of wildlife are quite unknown in Canada. There has been practically no work done as to the effects of aerial spraying of forests on the wildlife in those forests.

Mr. MACALUSO: There has been none?

Mr. PREBBLE: Practically none.

Mr. MACALUSO: What would you recommend?

Mr. PREBBLE: I would recommend that the wildlife people do intensive research into the use of pesticides in relation to wildlife, as is done in relation to insects and trees. We think this should be done in the defence of the forest, and we think the wildlife people have an obligation to find out what is the real impact of insecticides on wildlife. There has been much more work done on the fisheries side. The short term effects on fisheries have been studied. The main effects are on the young, one or two year fish, and not on the mature fish.

Mr. MACALUSO: Do we have some department which could study the effects of forestry spraying on wildlife? Is there any department of our own that does this kind of a study?

Mr. PREBBLE: I think the answer is no. As I indicated earlier, we have done observational work on birds and so on.

Mr. MACALUSO: This is more of a sideline for you?

Mr. PREBBLE: Yes.

Mr. MACALUSO: You are mainly concerned with combating the hazards to the forests?

Mr. PREBBLE: Yes.

Mr. MACALUSO: I gather there should be either some department of the Canadian wildlife services, or some responsible body, that should study the effects on wild life.

Mr. PREBBLE: They have just got started doing some now. I think they have one man assigned to that problem.

Mr. MACALUSO: That is not sufficient?

Mr. PREBBLE: No. We think the study should also be carried on into the question of humans consuming wild birds or game.

Mr. MACALUSO: This probably would be connected with the wildlife service?

Mr. PREBBLE: They could collaborate with the Department of National Health and Welfare on that. There is quite a gap in the investigation.

Mr. MACALUSO: Does the Department of National Health and Welfare have a research bureau at the present time which is conducting an examination into the effects of forestry spraying on man?

Mr. PREBBLE: I think the answer is no, to my knowledge.

Mr. MACALUSO: Thank you.

Mr. BASFORD: I would like to return to Mr. Cashin's question about private and public spraying. In British Columbia where the operators have perpetual yield forest management licences which comprise huge areas, they do not do their own spraying.

Mr. PREBBLE: The operations in British Columbia have been carried out jointly under the sponsorship of a control committee of the British Columbia loggers' association. I think in every case of which I know where there has been

a control project it has been done through the interests of more than one group. They have been organized and co-ordinated through the pest control committee of the loggers' association.

Mr. BASFORD: These forest management licences are so huge that they can cover a whole watershed system. Who would do the spraying?

Mr. PREBBLE: I think it would be done as a venture of the loggers' association.

Mr. BASFORD: What would be the role of the provincial or federal department?

Mr. PREBBLE: The provincial department and the pest control committee organize the control programs and our people are there to provide information and follow-up studies.

Mr. BASFORD: What happens if the sprayer wants to spray and the department does not want the spraying to be done?

Mr. PREBBLE: Which department?

Mr. BASFORD: The Department of Forestry, either provincial or federal.

Mr. PREBBLE: The provincial department, of course, would have some authority in that field. Our authority comes through persuasion and trying to find facts and make recommendations.

Mr. BASFORD: What authority has the provincial department?

Mr. PREBBLE: I would imagine the authority would be through the terms of its management licence regulations and procedures.

Mr. BASFORD: I did not hear you.

Mr. PREBBLE: I think it would be an authority residing in the relation it has with the industry through its management licensing procedures. I think, actually the authority is more toward getting something done than in preventing it, quite frankly. I do not think the provinces have authority, with the exception of Ontario, which would deny the private owner his willingness to go out and do something. That would be my impression.

Mr. BASFORD: I do not think the terms of the forest management licence would include a provision that they cannot do this.

Mr. PREBBLE: As I say, it is more on the other side; they have an obligation to protect.

Mr. MACALUSO: Could a Canadian wildlife representative be subpoenaed to appear before this committee?

The CHAIRMAN: I have a note written here to look into it.

Mr. MACALUSO: I would make a motion that this be done.

The CHAIRMAN: I do not think a motion is necessary.

Mr. BASFORD: I would like to go on with something which was raised by Mr. Macaluso in respect of the matter of research. Do you think that further money should be spent on this in the wildlife service?

Mr. PREBBLE: Yes; in all these fields relating to forest protection.

Mr. BASFORD: Are there any other areas of research which you would recommend?

Mr. PREBBLE: Definitely we think there should be more done in fisheries, too.

Mr. OTTO: In that regard, does the United States do a considerable amount of work in respect of the results of pesticides on fish and wildlife?

Mr. PREBBLE: Yes.

Mr. OTTO: Is their information available?

Mr. PREBBLE: Yes, it is.

Mr. WILLOUGHBY: I would like to ask Mr. Prebble if there may not be a misunderstanding, at least on my part, in the case of one of the questions that was answered in regard to the possibility of research being carried on and the effect of these pesticides that are being used by the department on human beings. I know there have been related questions to this subject since the answer was given. Is my understanding correct that in so far as you know there is no research being carried on? I ask this because it is my understanding that the department of health and, particularly, the agriculture department are doing research on that very subject.

Mr. PREBBLE: But I was referring particularly to forest spraying.

Mr. WILLOUGHBY: Are these pesticides not similar substances to the ones being used by the agricultural department?

Mr. PREBBLE: Yes. I was conscious of the possibility of a misunderstanding at that time, but the question directed to me was this: was such work being done in the context of forest spraying, and that was the limitation of my answer. I know of no work being done in respect of forest spraying having that immediate implication, although the work done by the Department of Health and Welfare applies to sprays against humans under all circumstances, but is not specific to the forest spraying operations.

Mr. OTTO: Mr. Chairman, I move we adjourn.

Mr. BASFORD: If there are no further questions, Mr. Chairman, I would like to say something at this time. I do not want to involve the Department of Forestry directly but it has been my impression that the officials we have had from the Department of Health and Welfare, the Department of Agriculture and from food and drug have been at pains to see that the committee did not get unduly concerned about this whole issue. This is not a criticism of our officials; I think we have very fine civil servants, particularly in the scientific end of it. They are very dedicated people. However, I think we are engaging in an exercise of futility and most of our officials do not want to get us too concerned. I do think they themselves are far more concerned than they indicate. We revert to the issue we have hit upon a number of times in connection with federal legislation, that as long as the pesticides are safe if used as directed that is the end of the federal regulatory power. We have hit on this time and time again.

I asked a question of Dr. Glen earlier. I asked him is it not conceivable risks of misuse would be so great as to warrant the complete restriction of pesticides, and his answer was that he would not think so. Yet, the province of Manitoba took action the other day—and, if I may say so, this is the province which has the strictest regulations over the use of pesticides of any of the provinces. I read the statement of the provincial entomologist into the record, where you have licensed retailers for certain pesticides farmers cannot buy them with a licence, but even with those regulations they are now preventing the use of two pesticides. And, as the minister of agriculture from Manitoba said, as quoted in the Canadian press report, they took this action after conducting a great deal of research into the use of pesticides, and they came to the conclusion that under existing licensing rules there is still some question whether these two pesticides can be stopped from creeping into their dairy products. This would seem to me to represent a completely different outlook on the part of Manitoba officials than the position our federal officials take. I think we should have this difference of outlook explained to us.

It would be my hope that we could have some officials from the province of Manitoba testify before the committee and, for my own edification, I would like, if for no other reason, to have the agricultural and food and drug officials back again to explain the action taken by Manitoba because, as I say,

surely the risk of misuse is one of the questions that this committee is faced with. The province of Manitoba seems to have come to the conclusion that these two pesticides, at least, no matter how carefully they are in licensing the user, constitute a possible risk of contamination to the food products. Of course, this is the essential thing which we are concerned with. We are concerned not only with the protection of public health but with the protection of the reputation and the integrity of our agricultural products in the export market. If the risks of misuse are so great I think we at the federal level should be looking into it. At the moment it seems to me that our federal laws and regulations do not properly take into account that risk.

Mr. OTTO: Mr. Chairman, there is another meeting at 11 o'clock and one at 11:30; since there are no further questions I take it we will be adjourning. I am going to have to leave now and, if I do, there will not be a quorum. May I move that the committee adjourn?

Mr. BASFORD: There is another point I would like to take up, Mr. Chairman. As you know, we have been experiencing difficulty in getting members here. Would the steering committee consider meetings once a week instead of twice, in view of the fact that members of this committee are on other committees, as a result of which a difficult problem is involved.

The CHAIRMAN: If I may say a few words. What you have said is quite true. The purpose of the committee is to look into all aspects of this and, at the moment, we have looked into only the aspects pertaining to the federal government. It is the hope of the committee, and particularly the steering committee, that we will have before this committee people presenting many views and from everyone's different viewpoint we will come to the conclusions that seem obvious. The steering committee are more than willing to consider any witness that any member of the committee wants to have appear before them.

To give you some idea of the people we have tentatively lined up, I might say we have the Minister of Northern Affairs and National Resources. His appearance will probably end the questioning of the government departments; next the consumers association of Canada; Professor Brown, the head of the department of zoology, University of Western Ontario, the Canadian federation of agriculture; the Canadian agricultural chemical associations; the cyanide company, which produces materials and, as it was mentioned this morning, the Canadian wild life service. I have asked also a toxicologist from the United States to appear, as well as the provincial entomologist from the province of Ontario. We have written letters to the last two I have mentioned, inviting them to attend. To date we have not received an answer. However, if anyone in the committee does have idea as to who should appear we would be more than delighted to hear you and see what we can arrange.

Mr. MACALUSO: Apart from that, Mr. Chairman, I do think this problem of getting a quorum is getting to be a very important one and, as a result, it has an effect on the attendance at these meetings. I know this has been brought up many times before. Many of us are on a number of other committees. I am on at least three. It would seem to me that this committee is one of the most important ones. We do have a responsibility to some of the other committees, however, and I would ask that the steering committee look into the hours of sitting. At times the morning sessions are fine. I am referring to Thursday morning. But, I find it most difficult on Tuesday mornings to attend, as I am sure many other members do. Since there may be authority for us to sit while the house is sitting I think we should give consideration to this. As it is now we are experiencing considerable difficulty, as you know, in obtaining a quorum. This committee does have authority to sit while the house is sitting, does it not?

The CHAIRMAN: Yes.

Mr. MACALUSO: I would suggest the steering committee bring back a report on this.

The CHAIRMAN: The steering committee is meeting tomorrow afternoon and we will consider this. Last year we tried sitting in the afternoon but it was a complete failure because people wanted to sit in the house and take part in the debates there. On occasions we have to cancel our afternoon meetings because of a lack of a quorum.

Mr. MACALUSO: It may be that these committees will have to be reduced to once a week.

The CHAIRMAN: We will consider this.

Mr. MACALUSO: Before adjourning, may I take this opportunity of saying that the brief presented by the minister and the members of the department is one of the frankest we have had before this committee since it began its sittings. I would like to thank the gentlemen who have come here this morning for being as frank as they have been. There have been many things opened up which I honestly believe, as Mr. Basford stated, have not been misrepresented to us, but have been coloured somewhat; I am another one who would be most interested in having the departmental officers who were here before to return to the committee.

The CHAIRMAN: If there are no further questions I would like to thank the gentlemen who kindly came here this morning.

The meeting will be adjourned until next Tuesday, October 29, when the committee will hear the Minister of Northern Affairs and National Resources.

Mr. MARCOUX: In fairness to the officials of the other departments we must say that they have been honest and very clear in the giving of their evidence. However, as they have said, on occasions they have to rely upon provincial authority and that is the reason why specific recommendations were not forthcoming in that connection.

Mr. ROXBURGH: Perhaps we have been a little more precise after three or four meetings.

HOUSE OF COMMONS

First Session—Twenty-sixth Parliament

1963

SPECIAL COMMITTEE

ON

FOOD AND DRUGS

Chairman: Mr. HARRY HARLEY

MINUTES OF PROCEEDINGS AND EVIDENCE

No. 8

TUESDAY, OCTOBER 29, 1963

Statement by The Honourable Arthur Laing, Minister of Northern
Affairs and National Resources

WITNESSES:

Mr. W. W. Mair, Chief of the Canadian Wildlife Service; Dr. V. E. F. Solman, Superintendent of the Eastern Region of the Canadian Wildlife Service, both of the Department of Northern Affairs and National Resources; Dr. G. D. W. Cameron, Deputy Minister of National Health, and Dr. T. H. Patterson, Chief of Occupational Health Division, both of the Department of National Health and Welfare; and Dr. H. Hurtig, Associate Director (Pesticides), Branch Executive, Research Branch of the Department of Agriculture.

ROGER DUHAMEL, F.R.S.C.
QUEEN'S PRINTER AND CONTROLLER OF STATIONERY
OTTAWA, 1963

SPECIAL COMMITTEE ON FOOD AND DRUGS

Chairman: Mr. Harry Harley

Vice-Chairman: Mr. Rodger Mitchell

and Messrs.

Armstrong	Enns	Otto
Asselin (<i>Richmond-</i>	Fairweather	Pennell
<i>Wolfe</i>)	Gauthier	Roxburgh
Baldwin	Howe (<i>Hamilton South</i>)	Rynard
Basford	Macaluso	Valade
Cashin	Marcoux	Whelan
Casselman (Mrs.)	Nesbitt	Willoughby.—24
Côté (<i>Longueuil</i>)	Orlikow	

(Quorum 10)

Gabrielle Savard,
Clerk of the Committee.

MINUTES OF PROCEEDINGS

TUESDAY, October 29, 1963.
(8)

The Special Committee on Food and Drugs met today at 9.50 a.m., the Chairman, Mr. Harry C. Harley, presiding.

Members present: Messrs. Basford, Cashin, Côté (*Longueuil*), Enns, Harley, Macaluso, Mitchell, Marcoux, Nesbitt, Pennell, Roxburgh, Rynard, Valade, Whelan, Willoughby (15).

In attendance: The Honourable Arthur Laing, Minister of Northern Affairs and National Resources; Mr. W. W. Mair, Chief of the Canadian Wildlife Service; Dr. V. E. F. Solman, Superintendent of the Eastern Region of the Canadian Wildlife Service, both of the department of Northern Affairs and National Resources. *From the department of National Health and Welfare:* Dr. G. D. W. Cameron, Deputy Minister of National Health, Dr. T. H. Patterson, Chief of Occupational Health Division. *From the department of Agriculture:* Dr. H. Hurtig, Associate Director (Pesticides), Branch Executive, Research Branch.

The Chairman called the meeting to order and drew the attention of the Committee to one of the recommendations of the subcommittee regarding a further reduction of the quorum. At the suggestion of Mr. Pennell, it was agreed to postpone discussion on this matter until the Minister had made his presentation.

The Chairman then invited the Minister to address the Committee. Mr. Laing introduced his officials and read a prepared statement.

Assisted by Mr. Mair and Dr. Solman, he answered questions dealing with the problems created by pesticide residues in wildlife, the research done in relation to the preservation of wildlife, the difficulty for the department in securing specialists or persons interested in doing research work in this relatively new field of pesticides.

Questions were also directed to Mr. Mair about the operation and functions of the Canadian Wildlife Service, and the organization of the interdepartmental committee set up in respect of forest spraying and its effects on fish, wildlife and man.

Dr. Cameron commented on the interest taken by the Department of National Health and Welfare in the question of tolerance levels of Eskimos and Indians, of pesticide residues and nuclear fallout.

Dr. Hurtig gave further information on forest spraying.

Dr. Patterson was questioned on the application to man of evidence showing loss of reproductive capacity in animals, as a result of build up in the system of toxic compounds.

There being no further questioning, the Chairman thanked the Minister and his officials who retired.

The Chairman referred to a meeting of the Subcommittee on Agenda and Procedure held on Friday, October 25, and the Committee agreed not to sit Thursday, October 31st, as no witnesses were available that day.

The Chairman read the schedule of meetings drawn up for the month of November, and presented the following as the Subcommittee's second report:

The Subcommittee recommends:

1. That the days and hours of sittings remain unchanged for the time being; but
2. That the Committee meet Friday, November 8, instead of Thursday, November 7, to hear Professor A. W. A. Brown, Head of the Department of Zoology, University of Western Ontario, London, also the Provincial Entomologist of Manitoba, if he is available that afternoon;
3. That notwithstanding the resolutions passed by the Committee on August 1st and October 15th, the quorum be set at 9 members;
4. That the Committee complete part (a) of its order of reference and present an interim report on the hazards of food contamination from insecticides, pesticides and other noxious substances;
5. That the safety of drugs be studied before the cost, although the committee members will have the privilege of asking questions from witnesses who could give information on both the safety and the cost of drugs.

Regarding Item 1, the Chairman was instructed to inquire further about correlating the meetings of committees.

Objections were raised to the recommendation to reduce the quorum to 9, and it was agreed that the quorum remain the same.

Moved by Mr. Côté, seconded by Mr. Rynard,

That the second report of the Subcommittee on Agenda and Procedure, as amended, be now concurred in. *Carried unanimously.*

On motion of Mr. Basford, seconded by Mr. Côté,

Resolved,—That a paper prepared by Dr. Hurtig, Associate Director (Pesticides) of the Research Branch of the Department of Agriculture, and entitled "Benefits from Pesticide Use", be printed as an appendix to this day's proceedings. (*See Appendix hereto*).

At 11.50 a.m. the Committee adjourned to 9.30 a.m. Tuesday, November 5, 1963.

Gabrielle Savard,
Clerk of the Committee.

EVIDENCE

TUESDAY, October 29, 1963.

The CHAIRMAN: Gentlemen, the meeting will now come to order. We have a quorum. Might I say before I introduce our witnesses that later on, at the end of this meeting, we will be considering a report of the steering committee. I might say that one of the recommendations of that report is—and I shall read it now—"that notwithstanding the resolutions passed by the committee on August 1 and October 15, the quorum be set at nine members". This is a reduction of one member from the 10 which we have at the present time.

Mr. MACALUSO: Mr. Chairman, is it necessary that we reduce the quorum to nine? I think our problem is that, with five committees meeting this morning, many of us have been unable to attend any of the other committees. It is my feeling that we should sit at the same time as the house is sitting, but we should not chastise our members who have obligations to other meetings as well. I think the answer to the problem is to change our time.

The CHAIRMAN: The steering committee met and we considered all times. We felt that the hours of sitting should remain unchanged, because when we went into detail with respect to other possible times we found that there were many reasons why one would not likely get a quorum.

Mr. WHELAN: If we checked to find out where our people are, we would find that some of them are doing work in their own offices at this time; and we all have work to do in our offices.

The CHAIRMAN: You cannot force a member to come to a meeting.

Mr. PENNELL: I suggest that we hear from the minister now and deal with this matter later.

The CHAIRMAN: Very well. We are pleased to have with us this morning the hon. Arthur Laing, Minister of Northern Affairs and National Resources, and he is accompanied by some of his officials. Mr. Laing?

Hon. ARTHUR LAING (*Minister of Northern Affairs and National Resources*): Thank you, Mr. Chairman, and gentlemen. I deem it a privilege to appear before you today to give you some views of certain aspects of these questions which are troublesome to our department. I would like to say I have a group with me which includes Mr. W. W. Mair, who is chief of the Canadian wildlife service, and Dr. Solman, who is a technical expert in this line, and who will be able to answer technical questions, I think, afterwards.

The statement I have I may say is very short, only about four or five pages. I think it contains pretty well some indication of the extent to which we have been troubled in our department by this question.

The reference paper on pesticides that was laid before you on October 10, 1963, contained a brief statement on the pesticide situation in regard to wildlife. I wish now to draw attention to conditions which worry us.

Pesticide residues in wildlife pose several problems. Though potentially hazardous, the amounts involved are usually very small, the chemicals are complex and their detection and measurement are time-consuming and very difficult.

Only a small fraction of the cultivated and forested areas of Canada (and of the United States) is treated with chemicals for pest control in any year. Many of the materials used, however, remain active for years and many kinds of wildlife move about widely. In other countries with pesticide use comparable to Canada's, most of the wild animals that have been tested had insecticide residues in their tissues.

Studies conducted in some other countries have shown that pesticide residues in wildlife there have exceeded the amounts specified by the health authorities as allowable in food handled commercially. Those residues have even reached levels which may constitute a human health hazard if the wildlife is eaten. Data from other countries have demonstrated that sublethal amounts of pesticides may interfere seriously with reproduction of wildlife and with survival of young. While Canadian data are lacking, the chemicals used and the species concerned are identical in many cases.

Natural populations of wild animals fluctuate in numbers from time to time. Animal carcasses disappear quickly in nature. Thus it may be very difficult to measure the effect of a poison on an animal population even if you know what poison is involved, what effect it has on individual animals, and where and when it is used.

We were unable to recruit staff competent to perform the studies needed to secure data on pesticide-wildlife relations under Canadian conditions. We have had to divert one of our experienced wildlife scientists to that work even though his former duties have had to be left in abeyance. He is now reviewing reports on work already done on the pesticide-wildlife relationship in other countries and will soon begin original studies. We are arranging, through the co-operation of a university, to begin to assess pesticide residues in tissues of wildlife early next year. The governmental agencies now doing residue analyses in Canada are fully committed to their own responsibilities and are unable to do wildlife residue analyses for us.

Co-operating United States agencies have done a few analyses on Canadian wildlife, including woodcock from the maritimes and ducks and duck eggs from Northwest Territories, and those have revealed the presence of insecticide residues. There was no suggestion that all or part of the pesticides had been secured in the areas where the animals were collected. Indeed the suggestion is that some of the material may have been secured in other areas, perhaps even outside Canada. The problem of insecticide residues in wildlife may very well be partly an international one, as are many other problems involving wild creatures which recognize climatic rather than political boundaries.

Wildlife, though not as important in the diet as in pioneer days, is still widely used for food. We have no recent figures on the amount of wildlife eaten by Canadians. But more than ten years ago, in co-operation with the provincial agencies concerned, we estimated that 48 million pounds of wildlife were eaten annually by Canadians, an average of about three pounds per person. Wildlife use for food varies widely. Some persons eat no wildlife. Some, particularly those living under primitive conditions on the land, may use hundreds of pounds of it each year.

Food intended for human use which is offered for sale is inspected for pesticide residues. Tolerance levels for pesticides in commercial food are based on lifetime consumption of food items. Because wildlife may not legally be offered for sale, the amount of wildlife which is inspected for pesticide residues is negligible.

Wildlife is an important resource for Canadians and their tourist guests. Our 1961 survey showed \$275 million spent by Canadian hunters and sport fishermen. No figures are yet available for expenditures by non-residents on hunting and fishing in Canada or by persons who enjoy wildlife for aesthetic,

cultural or other non-consumptive recreational purposes. As you are aware tourism is now our third largest earner of foreign dollars. We believe that every effort should be made to ensure that the resource, through careful management, will continue to be an important source of recreation and revenue. We recognize the necessity for the use of chemicals as a part of the total program for control of insects and other pests. It is therefore essential that there should be adequate regulations for the use of insecticides for agricultural, forestry and other purposes. Users of those chemicals must take great care to keep to a minimum any damage to wildlife populations or to those who may consume wildlife as food.

Our concern in regard to the importance of nuclear fallout on wildlife is in some ways parallel to our concern with pesticides. Because of the metabolic peculiarities of lichens, which are a very important food of the barren-ground caribou of Northern Canada, they absorb almost all the radionuclide material which falls on them. Studies in Alaska, Finland, and Sweden showed high levels of SR-90 and CS-137 in lichens there. Levels of those isotopes in caribou in Alaska, and in reindeer in the other countries were also high. Alaskan studies have shown high human levels of CS-137 in persons consuming caribou. It is thus probable that radionuclides are passed through the food chain from lichens to caribou to humans.

For the past two and a half years the Canadian wildlife service has been concerned with radionuclide contamination of big game animals. Results of early studies on elk were inconclusive. Bone material of reindeer from the Mackenzie Delta and of caribou from the Northwest Territories has been collected. The caribou material is being analyzed for radionuclides.

Because of human implications, the Department of National Health and Welfare has entered into a co-operative program with my department to analyse caribou and reindeer bones and flesh to determine if radionuclide levels are such as to endanger northern residents consuming them. The results of current analyses will determine the scope and nature of any further studies.

Mr. Chairman, that concludes the statement I have to make. If there should be any questions directed to us by members of the committee I am quite sure that my officials will do their best to answer them.

The CHAIRMAN: Thank you very much, Mr. Laing.

Mr. RYNARD: I wonder if we could have a copy of the minister's statement?

The CHAIRMAN: It will be printed in the minutes of today's meeting. Although the minister brought several copies with him, unfortunately there are not sufficient copies to go around.

Are there any questions of a general nature which any of the members of this committee would like to direct to the minister at this time.

Mr. PENNELL: Is it difficult to carry out these analyses on wildlife and, if so, is it an expensive operation?

Mr. MAIR: Yes, it is extremely difficult and a very expensive operation. Not only that, it is difficult to do it in such a manner that the results which you obtain in different areas are, indeed, comparable. I am referring to different laboratories and that.

Mr. CÔTÉ (*Longueuil*): The minister has said it is difficult to conduct a specialized study on pesticide residues in connection with wildlife. Did you endeavour to conduct a specialized study or do you have any personnel under training who will become specialized in this area?

Mr. MAIR: When we had the position available we advertised, as we do for any other position. We made contact with the universities across Canada ourselves in an attempt to find persons with this interest. We really had no response, as a result of which we finally diverted a man from our own service.

Mr. CÔTÉ (*Longueuil*): I presume you requested medical men?

Mr. MAIR: As I recall, we were not too specific about it because we expected trouble. We left ourselves open to take any man that might have the combination of skills that would make it possible for him to do a good job for us. If we got a man who had skills in only one particular line his studies might tend to go in one direction only. What I am saying is that if his specialty happened to be in only one aspect of it he would like to work in only that area of it. We did not find anyone interested in it at all.

Mr. CÔTÉ (*Longueuil*): Was it because of the existing salary?

Mr. MAIR: I think not, although this is always a factor when you are looking for men who are specialized. But, there were not too many in Canada at the time.

The CHAIRMAN: Have you a question, Mr. Roxburgh?

Mr. ROXBURGH: Do you know if there are any students in the universities carrying out work projects in this connection, preparing theses and that sort of thing? Are there any interested men within our universities at the present time who could be picked for that line of work in the near future?

Mr. MAIR: We are not aware of any.

Mr. ROXBURGH: There is no special course or anything of that nature within the universities?

Mr. MAIR: No.

Mr. ROXBURGH: And there is no work being done by any individual students?

Mr. MAIR: We know of only one person who is interested in this particular field and, of course, we are looking into ways and means of encouraging that person to continue in the field.

Mr. ENNS: Has consideration been given to the introduction of a federal bursary which would induce students to take on a program of this nature? If it is to be effective it should be extended to the point where you get a qualified type of person, which is badly needed in this area.

Mr. MAIR: That is right, sir. There are two factors involved; one is the financial encouragement to enable them to go through the numerous years of training necessary and the other, of course, is to offer a useful and challenging career on the completion of their training.

Mr. PENNELL: What size staff would you expect would be required to do an adequate job in this particular field as far as wildlife is concerned?

Mr. MAIR: Well, this is perhaps too difficult to say. I suppose every research organization would like to do much more than it is really going to be able to do, in view of financial limitations. We did draw up a program or a plan, as you might suppose, of how we could grapple with this problem, and we visualized we would need at least four persons in this over the next two or three years to make any impact on it. At the present moment we know very, very little about the details of the problem in Canada.

Mr. LAING: May I ask Mr. Mair this question? Is not our chief problem principally in the areas in the north country where the people live on wildlife, as a result of which the collection of case material is difficult over such a tremendous area. That constitutes one third of the area of Canada and it is in this area where the people are more dependent upon the use of game for food than in any other area.

Mr. MAIR: That is correct.

Mr. MACALUSO: When the Minister of Forestry and his officials were here recently mention was made of an interdepartmental committee on forest spray-

ing operations, made up of representatives of the departments of forestry, fisheries and Canadian wildlife service. In his report to us he did state:

There has been comparatively little study of wildlife populations in sprayed forests of Canada; in fact, the real consequences of such treatments on wildlife populations are urgently in need of study.

This has been borne out by the minister's statement today. But, as I understand it, there is only one in the department who is conducting any research in this connection. Is that correct?

Mr. LAING: I am not sure.

Mr. MAIR: There is just the one man.

Mr. MACALUSO: And, Mr. Mair said there was a financial limitation but that you could use four men right now. Would you advise whether the fact there is a limitation in connection with your research is brought about by the problem of financing.

Mr. MAIR: Basically it is a matter of finances or positions. Had we those positions I believe at the present time we could not fill them in Canada.

Mr. MACALUSO: Could you give a more detailed statement? What, if anything, is the wildlife service doing in this field of, for instance, the effects of aerial spray on wildlife up north? Is there anything being done at all? Is there any survey being conducted by the Canadian wildlife service?

Mr. MAIR: No, not in northern Canada at the present time.

Mr. MACALUSO: Anywhere in Canada?

Mr. MAIR: No, not by the Canadian wildlife service. But, we are working quite closely with the provinces. The provinces are in precisely the same position as we are in respect of staff to undertake this. We do attempt to keep an eye on what is happening, but I cannot go beyond that.

Mr. MACALUSO: Perhaps I could direct a question to the minister. Does the department intend to set up a specific division to deal with research into the pesticide problem on wildlife?

Mr. LAING: You are beginning to ask technical questions for which I am not equipped to answer. But, whatever the view is on this, I think we have been suddenly—and I mean suddenly—confronted over the past ten or fifteen years with an entirely new problem which did not exist before we used all these materials to do a certain thing. Very little study was made which related to its effects upon another part of our nature, and while the advantages of forestry dusting and so on are immediately obvious for the preservation of the forests very little, if any attention, has been given to the wildlife that inhabits our forests. We are dealing essentially with artificial imbalances created in nature and this is an entirely new field.

I think Mr. Mair and Mr. Solman would agree that part of the difficulty in securing people—and I think this would be obvious to the members of the committee who are medical men—is that this is a new specialized area which is not probably as attractive as it might be. In other words, the type of person we want on the scene has not emerged yet. I do believe we are going into an entirely new field of relationships which are very involved.

Mr. MACALUSO: Is there any communication between the Department of Forestry which may conduct spraying operations on timber land and your department; do they inform you that they are going to spray this particular area? Is there any communication at all as to the type of pesticide that may be used in these cases, and the effect it may have on wildlife?

Mr. LAING: Yes, there is. There is a continuing committee of the various departments who are working on this now. I would admit that substantially

we are looking for results of a situation that already have occurred rather than looking forward to the balancing of the various terms in the various departments, and this should be looked at quickly.

I am aware that in the provinces and, in particular in New Brunswick, a considerable amount of work was done. The result of this imbalance is well known. However, in most instances, they seem so far to have been looking backward to results which have occurred rather than putting emphasis on looking forward to the avoidance of these results or the balancing of them.

Mr. MACALUSO: In the light of the findings, where there is now a difficulty in hiring people is it the intention to set up a department of research and to staff such a department in order to look into research and the future effects of pesticides and insecticides on wildlife?

Mr. LAING: Well, I would think there has been enough said here today to indicate that is highly advisable. However, I think its success is going to depend on the degree of co-operation we have with the provincial departments.

Mr. MACALUSO: The Department of Forestry maintains certain centres throughout the country; would it not be possible to work together with those departments and to have one representative of the Canadian wildlife service of the Department of Northern Affairs at those centres.

Mr. LAING: Well, I would give it as an opinion that probably this sort of thing you are indicating will be one of the happy results of the setting up of this committee.

Mr. WHELAN: Mr. Chairman, first of all I should like to ask the minister to repeat the figure he gave earlier in regard to the amount of money spent by hunters in Canada.

Mr. LAING: The amount I stated earlier is \$275 million.

Mr. WHELAN: The minister also stated that Canadian information was lacking in respect of the effect of pesticides on wildlife, and that the information in their possession has been received as a result of efforts made by other countries, and it is upon the basis of this information that his report was prepared.

Mr. LAING: Yes. My men will answer in this regard, but I can state that more work is being done relative to the amount of pesticides involved in the United States. I think I am correct in this statement.

Mr. WHELAN: You stated that there was three pounds of wild game per person consumed in Canada. I do not think you related these figures to any particular areas in Canada. I would suggest that many individuals in Canada have never tasted wild game. Could you indicate in which area the bulk of wild game has been consumed?

Mr. ROXBURGH: Are you referring to nightclubs?

Mr. LAING: Mr. Whelan, you have stated the reason we indicated, namely that these figures were ten years old in Canada. It was also obvious to us that many Canadians had never eaten any wild game while others had probably consumed several hundred pounds per year.

Mr. WHELAN: I would assume that wildlife of the far north would never come into contact with areas where pesticides were used to any great extent; is that correct?

Mr. MAIR: They would only come in contact with pesticides as used for spraying for mosquito control, and this would be to a relatively limited extent.

Mr. WHELAN: I assume that migratory birds would not come in contact with heavy use of pesticides in areas where spraying is carried out; is that correct?

Mr. MAIR: I would suggest that they would come in contact with pesticides in certain areas.

Mr. LAING: I should think migratory birds would come in contact with heavy uses of pesticides.

Mr. WHELAN: In making that statement I had in mind particularly geese, but I suppose in western Canada ducks would come in contact with the pesticides used in various areas?

Mr. MAIR: In respect of wintering grounds, sir, there again there are areas of heavy use of pesticides.

Mr. LAING: The feeding grounds of migratory birds are areas where insecticides are used substantially.

Mr. WHELAN: If I understood you correctly you did not state definitely that wildlife would become sterile as a result of the uses of pesticides and insecticides. What information have you in this regard?

Mr. MAIR: I think we have stated that there is close liaison with United States fish and wildlife service. Their program of studies regarding the effects of pesticides on wildlife, having in mind laboratory facilities, now amounts to millions of dollars. These studies have proved quite conclusively that sub-lethal levels of certain pesticides produce a degree of sterility, or produce chicks that are not viable. They do not develop but die within the first few hours or are deformed in some way. This research has been carried out on many occasions in laboratory tests.

Mr. Chairman, perhaps I could refer back to something that has been said earlier. Our problem in this regard, as Mr. Laing has pointed out, is to find these animals in order to test them. Research was carried out in 1949 and in the early 1950's. The first two studies in regard to orchards were carried out in Nova Scotia and the Okanagan, in British Columbia. The third study was carried out in sprayed areas in New Brunswick. We were particularly interested in birds. These birds, of course, are quite mobile and when they die others move in to replace them. We admit that we just could not find the dead birds, and we were forced to arrive at the conclusion that at the time the studies were carried out we could not state that there was serious harm being done to these creatures. This same statement is true in respect of mammals. With respect to amphibious creatures in waters where these sprays were used, there was a very high death rate, in some cases almost to 100 per cent.

When studies were carried out in respect of reproduction in the mid 1950's we received information which gave rise to some concern on our part in this regard.

Mr. WHELAN: When you refer to animals are you including all forms of fish in this category? I am referring to the fact that in the past in New Brunswick the salmon population was represented as being depleted, yet this year seems to be the most lucrative for salmon fishermen in New Brunswick.

Mr. MAIR: I was not referring specifically to fish, as I realized that you have had members of the fisheries department before you. However, in most instances when reference is made to wildlife sport fish are included.

One of the things that concerns us is that if you kill simply 10, 25 or 50 per cent of birds in an area, that gap will be filled within the next two or three years as a result of other birds taking their place. However, if the reproduction potential of these birds is permanently affected there will be a gradual decline in the population. This gradual decline cannot be related to any definite cause.

Mr. WHELAN: Is your estimate of the amount being spent by hunters in Canada in the order of \$275 million not strictly related to the sale of licences?

Mr. LAING: That is an estimated amount spent by hunters.

Mr. WHELAN: That figure represents the amount spent by hunters on everything in this field?

Mr. LAING: That is true. I assume that the source of that figure is also the source of information from which the per capita consumption figure arose.

Mr. WHELAN: We are quite aware of the large amount of money spent by hunters in our area, hunting migratory game. Are you in a position to state how much wildlife is killed by pollution caused other than by the use of pesticides and insecticides in and around our forests and waters?

Mr. MAIR: I cannot give you a particularly meaningful figure. In some instances of pollution 10,000 or 20,000 ducks may be lost. There was one case in Newfoundland where 20,000 birds were destroyed. I am sure there have been occasions when this loss has been much higher. In this regard we are only able to count the losses in certain locations.

Of course, we have also lost a large number of water fowl as a result of a disease known as botulism.

Mr. WHELAN: Do you maintain any check in this regard, in the great lakes area? Do you police pollution in any specific waters?

Mr. MAIR: We do not depend in this regard entirely on our own limited staff, but as well on the R.C.M.P. and provincial game officers, as well as on Department of Transport officials.

Mr. WHELAN: Does the R.C.M.P. patrol specific areas in regard to pollution?

Mr. MAIR: The R.C.M.P. patrol in respect of pollution generally on our behalf, yes.

Mr. WHELAN: What pesticide is the most damaging to wildlife, or is there any specific pesticide that is worse than another?

Mr. MAIR: I will ask Dr. Solman to answer that question.

Mr. SOLMAN: The results of tests carried out by other countries would indicate that chlorinated hydrocarbon types of insecticides have caused the most trouble; however, I do not think you can put a finger on any one specific insecticide.

Mr. RYNARD: Mr. Chairman, are there any checks made in co-operation with United States in respect of migratory birds, and is that information available to both authorities?

Mr. MAIR: There is continuing liaison between the two countries in this regard. I feel that there is in existence the closest possible liaison in this field and any information they have is transmitted to us within a short period of time and vice versa.

Mr. RYNARD: Keep in mind that in many areas in the United States spraying is carried out to a greater extent than in Canada, and in the event migratory birds are picking up these poisons in the United States rather than in Canada, is there any control in this regard?

Mr. MAIR: It is exceedingly difficult to resolve this matter. It is sometimes possible to find out where the birds have picked up these insecticides by the chemical involved. However, certainly the United States fish and wildlife service is concerned with this situation. This service carries out a tremendous program of study, and I think it is safe to say that they are right on top of the situation and that nothing escapes their attention. We transmit immediately any information we have in this regard to that service and they do likewise in respect of their studies.

Mr. RYNARD: Is there any fear that over a period of years there will be an increasing amount of insecticides contained in human bodies, particularly Eskimos and Indians, which might produce sterility? Has there been any consideration given to this situation?

Mr. MAIR: We have given consideration to this problem, sir, but as yet there is no evidence of this development. It would not be fair to say that we are not interested in the human health aspect of this problem, because we are concerned in many respects, but this is not our responsibility. We do have very close co-operation with the departments of national health and welfare, agriculture and forestry. Certain joint committees hold meetings in this regard, and between meetings there is continuing liaison.

Mr. RYNARD: Have there been any post mortems carried out on Eskimos or Indians which would indicate amounts of insecticide or pesticide residues which are considered to be harmful?

Mr. MAIR: I am not able to answer that question, sir. There is a representative from the Department of National Health and Welfare present who may be able to give you an answer.

Dr. CAMERON (*Deputy Minister of National Health*): I am unable to answer that question, Mr. Chairman. However, I might state that we are naturally interested in this point as well as in that other point raised by the minister in his report regarding fallout. Studies in this regard are being conducted. It might be of interest to note that the birth rate in the north is much higher than in the rest of Canada.

Mr. RYNARD: Mr. Chairman, for my own personal information I should like to ask another question in respect of the caribou. Is there a noted decrease in the number of caribou in Canada as a result of the use of insecticides in the north? Has any analysis been carried out on caribou in respect of the effect of strontium contained in the lichen? I understand that such an analysis could be made as a result of a study of the bones of Eskimo and Indian children who consume large amounts of caribou.

Mr. MAIR: The decline in the caribou herds has been a matter of concern in Canada for upwards of 40 years, and perhaps very active concern for at least 30 years. Earlier studies were conducted in respect of caribou many years ago, but the means of transport at that time were limited and the results were also limited.

In 1948 and 1949 there was a very extensive survey undertaken by our department which resulted in the conclusion that the central mainland herds of barren ground caribou was of the order of approximately 660,000. It is believed that in early days the total number was perhaps of the order of 1,500,000.

We worked continuously on caribou since that time. We undertook another survey in 1959, and it was our belief that the same herds at that time numbered about 250,000. There have been many things done, as you would expect, over the years in an attempt to cope with this situation, and we believe that we are holding our own. In other words, perhaps we have not lost too much and have not gained too much. We believe the reasons, at the present time, for this situation relate to the human kill which, after all in some years, is as great as, or greater, than the annual increment. Another reason is the possible burning of winter ranges and certain other factors such as bad seasons, loss of calves in the first week after birth, and so on.

We have no evidence whatsoever to support the thesis that the radioactive fallout has had anything to do with this decline. During this same period that we have been struggling to hold the caribou herds and to bring them to a point of increase, in some areas in Alaska caribou have increased very significantly. We cannot say, on the basis of the evidence available to us at present, that the radioactive fallout has had anything whatsoever to do with it. We do not discount what influence there may be but it would take ten years of study to prove whether or not there has been any effect. We are engaged in

reproductive, nutritional and range studies. We are going into it in detail. However, these are long term things; they take at least 10 years.

Mr. RYNARD: I am wondering about another angle, Mr. Chairman. Have any checks been done on children to see what the increase was in strontium—I mean children who are eating some of this food?

Mr. MAIR: Again this falls within the purview of the Department of National Health and Welfare.

Mr. CAMERON: Mr. Chairman, there is a study going on. It was stepped up subsequent to the report on the findings in Alaska. We have been collecting data on the actual fallout in the north for a considerable period of time, but the new arrangements are for the collection of bone samples—teeth and so forth—from the residents in the north who have remained in the north for a considerable length of time or even for all of their lives. We have also arranged with the Department of Northern Affairs and National Resources that whenever any residents of the north are coming south we would like to get hold of them long enough to make a direct measurement of the body content of radioactive material, which is done in a device we have here in the city for what we call a total body monitoring. It is a large steel vault-like structure in which we can make direct measurements. All these are plans. I cannot give you any complete results yet.

Mr. MITCHELL: I have a question along the lines of Dr. Rynard's questions. Has the department established a graph or has it arrived at a content percentage of radioactive material in wildlife which is dangerous to humans who consume the meat. Has that residue been sufficiently high so far to say that the meat is unfit for human consumption?

Mr. MAIR: There has been no such thing done for wildlife. We have a tolerance level by the Department of National Health and Welfare. This of course relates to lifetime consumption of the products involved.

Mr. MITCHELL: Do you mean that this would show in the human body after consumption of this type of food?

Mr. MAIR: No, I mean that when they are setting up tolerance levels—they can explain that better than I—they work of course with laboratory animals and determine what are the safe levels. They then use some factors to decide beyond that what should be permissible for humans. We are aware of these levels, and when we have any carcasses of wildlife tested, if we find they are approaching or they are above this level, we say, "here is some wildlife which is contaminated beyond what should be permitted in the market". However, as I said, the levels are based on lifetime consumption of these materials. Most people such as sportsmen, anglers and so on, of course eat relatively little wildlife in a year, but there could be real concern for those people who live on wildlife the year round, and they are not all in the north by any means.

Mr. MITCHELL: Your department is sufficiently interested to be able to say that this residue has increased in wildlife. Is that correct?

Mr. MAIR: We do not have figures to prove that that is so in Canada. We know it is so everywhere else and we have no reason by inference to believe it is different in Canada.

Mr. MITCHELL: That is true, but one of the reasons for setting up the program is to inquire into that. It is therefore of concern, and if it is of concern the danger must be increasing. That is what I am getting at. We are trying to get at this through this committee.

Mr. MAIR: As the use increases and as the types of chemicals that are used multiply in number, and in certain cases in toxicity—although not always so—it follows that there is an increase in hazard.

Mr. MITCHELL: That is all I am suggesting, that it is increasing; therefore an increasing study should take place.

Mr. ENNS: Many of my questions have been answered previously, but I have another one. Let us leave the danger of the fallout aside for the moment. Is there really a big threat in the pesticide problem in the north? I am thinking of caribou, for example. Is there that much spraying being done in those areas or is there any being done?

Mr. MAIR: I do not believe it is significant in caribou areas at the present time.

Mr. ENNS: To follow this up further, the wildlife that many of the northern residents eat is that kind of game, and therefore perhaps the danger is not quite as great and we as members should not be so shocked that there is not enough research being done. Maybe the problem is not really all that serious when we look at it in this other way, or am I being too optimistic?

Mr. MAIR: If I may say so, sir, I think there is sometimes a tendency to believe that all the people who are living a life on the land live in the remote areas of the north, while in fact a greater percentage of them live in what is, relatively speaking, the south. Of our Indian population, a greater percentage I believe live in the southern areas, some quite far south. Our trappers of course, many of whom live from the animals they trap and the game they get, live in the south, so this is not exclusively a northern problem. In the remote areas of the north the Eskimos live on what is available at the particular time of the year, and there is a period in the spring when they may use quite a number of eggs and they may take some migratory birds.

Mr. ENNS: May I ask how long is it now since pesticides have been used for forest conservation? Has it been more than 10 years?

Mr. MAIR: Dr. Hurtig is probably better able to answer that than I.

Mr. ENNS: Have they been used in significant amounts to affect say the wildlife? Is there enough experience with this so that we could begin to point and say that with this length of time there should be some results evident?

Dr. H. HURTIG (*Associate Director (Pesticides), Department of Agriculture*): You are concerned with forest spraying. The history of forest spraying in Canada goes back to the early days in the period between world war I and world war II where experimental amounts of lead arsenate were sprayed by airplane. This is a very toxic material.

Mr. ENNS: But this was an experimental phase only?

Mr. HURTIG: This involves a substantial block of land in eastern Canada. The large scale use of modern pesticides probably dates from the period from 1949 onwards.

Mr. ENNS: So that we now have almost 14 or 15 years of some experience with this. May I ask over what area is this being done. Is it only in populated areas?

Mr. HURTIG: The forest spraying can be divided into several categories. The one which many people are most familiar with is large scale spruce budworm control operations in the Atlantic provinces, particularly in New Brunswick, and in the eastern areas of Quebec. In British Columbia there are smaller and spottier areas which are treated, but not on a regular basis as are the areas involved in New Brunswick.

The other type of aerial application of pesticides or aerial treatment of forests where wildlife may be involved is the program that has to be carried on by the armed forces in the protection of personnel on radar bases and on air force stations in the north. Now, these are very small areas. They involve the treatment of breeding grounds in the immediate vicinity of the station involved

which is rarely more than within a radius of two or three miles of the living area. Some of the municipal organizations such as in greater Winnipeg have a large force. They may be involved in the treatment of plant mutations. Mr. Mair can correct me on this. A representative of his department is invited to sit in on the meetings relating to aerial operations planned by the defence people.

Mr. MAIR: We have either sat in on them or else the Department of Fisheries have sat in on them, and our interests are quite related.

Mr. ENNS: In other words, it is known where sprays are used. There is control there and it could be readily established when an area has never been sprayed.

Mr. HURTIG: A number of studies are made where the history of treatment is known and where large areas of unsprayed adjacent areas are involved.

Mr. ROXBURGH: I have an article here regarding the different insecticides such as dieldrin, aldrin and hexachlorophene. These kill muskrat, rabbits, ground squirrels, and even raccoons. This article points out that D.D.T. at its maximum dosage of one pound per acre used in forest protection had no detectable effect on animals, not until it was used at five pounds or more. Do you know whether they are still using these other products such as dieldrin and other similar ones? Are they still using it in the forestry branch in Canada?

Mr. MAIR: Again I think Dr. Hurtig could answer this better than I. I think the first figure constituted part of a report relating to the southeastern United States.

Mr. ROXBURGH: This is British experience as well. You are quite right, that happened in the southern United States, but in Great Britain they killed wood-pigeons and something like 200 pheasants, owls, and so on. They have used those products in Canada and I think that was the cause in that big fish kill in British Columbia. With all that experience are they still using these types of spray, or have they gone to D.D.T. in order to do the same thing, or some other spray that would do the same thing?

Mr. MAIR: Dr. Hurtig could give you more detail, but one result of the deliberations of this interdepartmental committee on forest spraying has been that we have been able to exchange information in respect of our problems, and the amount of D.D.T. that is being used has been reduced. D.D.T. very substantially, and other chemicals, now have been brought into use experimentally.

Mr. ROXBURGH: You are not answering my question. I am asking you, with this knowledge is the department still using these?

Mr. MAIR: I believe not.

Mr. HURTIG: As you recall, in the statement made by the Minister of Forestry and his officials the other day, the only chemical which has been used in forest spraying operations in Canada has been largely D.D.T., and as Mr. Mair has pointed out, Canada has pioneered in the reduction of the dosage from one pound per acre down to as low as one-quarter of a pound per acre. I believe it was mentioned last week that they now have under development another compound which is even more attractive from the standpoint of hazard; this compound is phosphamidon.

Mr. CÔTÉ (*Longueuil*): Mr. Mair, I understand you are the chief of the wildlife service. Is that correct?

Mr. MAIR: Yes.

Mr. CÔTÉ (*Longueuil*): When was this service first established?

Mr. MAIR: In 1947.

Mr. CÔTÉ (*Longueuil*): Why was it set up and what is the function of the service?

Mr. MAIR: It is history to me, because it was before my time with the service. I think you can say that it dates back in part to the signing of a treaty between the United States and Canada in 1916 for the protection and management of migratory birds. There was then the immediate setting up of the migratory birds section to deal with Canada's responsibility under the act which is the Migratory Birds Convention Act which was passed in 1917. Concurrently there was an interest in other phases of wildlife activity largely carried out in the early days by the national museum of Canada and the geological survey, because they had many naturalists there. Then, as the years progressed, there was the establishment of a game agency for the Northwest Territories. As these things grew, there came a time when it was considered desirable that these activities, particularly those relating to migratory birds, but also wildlife problems within the national parks, and in respect of research pertaining to wildlife in the Northwest Territories, be centralized in one agency. I believe this was the *raison d'être* behind the establishment of the service.

The management of wildlife in the Northwest Territories has never been a responsibility of the wildlife services, nor has management in the parks. However, the research in respect of all forms of wildlife in the national parks and the Northwest Territories and the Yukon always has fallen upon the wildlife service. Since 1947 the wildlife service has been the agency within our department responsible for the management and research in respect of migratory birds.

Mr. CÔTÉ (*Longueuil*): You became aware of the harmful effects from spraying of insecticides and herbicides on wildlife around 1950?

Mr. MAIR: The first studies were carried out on orchard areas in Nova Scotia and British Columbia in 1949 and 1950. The results of those studies indicated that with the level of concentrations being used we could not say there was a substantial loss; there might be some loss. If you kill the insects in an orchard, the birds will move out because there is no food. When they are no longer there, it is difficult to prove whether they moved out or whether they were killed. Our techniques were not adequate to demonstrate any serious damage. The same thing followed in the study of 1953-54 of an area that was sprayed in New Brunswick. At this time we had the data from the United States which indicated that with one pound per acre of D.D.T. there was not a significant direct loss of mammals and birds. Then as studies were carried on to see what would be the effects of sub-lethal doses, it became obvious from laboratory tests that there was this influence upon the reproductive capacity. This sort of information started us anew in our thinking on this.

I believe it was in 1959, or thereabouts, that we first started looking for someone to work actively in this field on a full time basis. As I said earlier, we could find no person and finally we switched over one of our best researchers who was working in the migratory bird field. I have to say that he has not been able to undertake any original research yet because he had to finish what he had been doing, and take at least a year to familiarize himself with the tremendous amount of literature which exists in this general area. It is almost beyond the ability of any single man to cope with the amount of literature which is supposedly available on this subject. Therefore he has to become very familiar with that. Also, in our planning in respect of studies, it would not seem too purposeful to duplicate studies carried on elsewhere if they are straightforward and the results conclusive. So, we are faced with an attempt to cope with this problem of the ecology of an area and what happens when an area is sprayed. So many animals are killed or made non-reproductive. What actually takes place? What are the long term effects?

Mr. CÔTÉ (*Longueuil*): Was it your service which found less D.D.T. per acre would protect wildlife?

Mr. MAIR: No. This is a joint finding of the several departments concerned with it. This was discussed at this interdepartmental committee and it was agreed there should be studies carried out and tests carried out with progressively smaller concentrations.

Mr. CÔTÉ (*Longueuil*): Did your service make any recommendations?

Mr. MAIR: We took no active field part in it. There was work going on at the same time by the northeast wildlife station in New Brunswick in the same field, and it was there that the woodcock were found which contained levels of pesticides.

Mr. CÔTÉ (*Longueuil*): Your service itself never found anything or made any recommendation in respect of the harmful effects of residues?

Mr. MAIR: Only on the basis of the discussion in the committee. We attended all these meetings. However, we ourselves carried out no field tests in relation to this.

Mr. CÔTÉ (*Longueuil*): Is the idea of setting up a research branch a recommendation from your service?

Mr. MAIR: I would not like to claim credit for it. I think it was a joint decision. There were persons present from the group which was actually doing the spraying. There were some present from the Department of Fisheries, from the forestry branch of our department, and from our own service.

Mr. CÔTÉ (*Longueuil*): Your department or your service does not work very hard on this idea; it is not your function, is it?

Mr. MAIR: At that time the forestry branch was a part of the department and they, of course, played a major part in the original research.

Mr. CÔTÉ (*Longueuil*): Because of the lack of specialists who are interested in working in this field, did you give up the idea of starting the research?

Mr. MAIR: No. As I say, we transferred this one man over. We made arrangements that when he is ready to undertake this work there will be facilities available for the testing of carcasses to determine the level of residue. All the presently existing agencies within the government in Canada are fully taken up, really, with their own problems. We have made these arrangements. We expect them to go into effect at the beginning of the new fiscal year. We are hoping to attract this person I mentioned who is concerned with a career in pesticides. We hope to attract that person into the service as quickly as we have a place.

Mr. CÔTÉ (*Longueuil*): There was a question asked the other day concerning one committee and another committee. They seem to be always referring to one another, and yet it seems that their functions are not very well established. Who really is in charge of the research in respect of pesticides; what department is completely in charge of that?

Mr. MAIR: It is not the responsibility of any one department. Each department has its own responsibilities. At least we hope to carry on our own responsibilities.

Mr. CÔTÉ (*Longueuil*): Is there no one in charge of all these committees? Every department seems to have its own committee, but no one appears to be in charge. When a question is asked of somebody relating to something else, nobody seems to know who is in charge.

Mr. MAIR: So far as I am aware there is no over-all responsibility residing with any single department in Canada in respect of the entire situation. Each of us operates within our own legal responsibility. We have certain responsibilities in respect of wildlife. We built our program around our responsibility,

but we relate it intimately to the work that is being done and to the responsibility held by the others; so, there is not necessarily an overlap.

Mr. CÔTÉ (*Longueuil*): To whom do you give your report? Does it stay in your department?

Mr. MAIR: No. There is a constant exchange. Dr. Solman, for instance, is on a committee in the Department of Agriculture. I have been the representative on the interdepartmental committee on forest spraying; but Dr. Solman probably will be on that committee. The same persons who are concerned are involved. I think there is no lack anywhere of either co-operation or liaison.

Mr. CÔTÉ (*Longueuil*): If I were to ask these same questions of members of other departments, would they give me the same answer?

Mr. MAIR: I believe they would. You may ask them.

Mr. CÔTÉ (*Longueuil*): Is there no one who is really in charge?

Mr. CAMERON: Dr. Glen, when he appeared before this committee, pointed out that there is an interdepartmental committee which has been meeting for some nine months periodically to discuss this whole subject, and it is this interdepartmental committee which produced the recent paper for you. The interdepartmental committee is continuing to hold its reviews of the areas which are in need of attention.

Mr. CÔTÉ (*Longueuil*): I know there is such a committee, but who has jurisdiction?

The CHAIRMAN: Mr. Côté would like to know who is chairman of the committee and who calls it together?

Mr. LAING: He wishes to know more than that.

Mr. CÔTÉ (*Longueuil*): Is this just a committee which was created on your own, or did someone in authority tell you that you should meet together and form a committee?

Mr. LAING: If I may say so, I think Mr. Côté probably is beginning to enter an area which marks up the reason why this committee was established. I think he envisions somebody in charge. You would still have a situation where the interdepartmental committee must at all times be consulted. Various departments are interested. The forestry department, assaulted as it might be by an insect destroying millions of feet of timber is interested in the destruction of the insect and the preservation of the timber. Other departments, such as our own, are interested in the preservation of the wildlife which might be affected malevolently by the application of the spraying by the forestry department. It is a question of balance, is it not? I think Mr. Côté is coming very quickly to the whole nub of this matter as to how the optimum can be achieved in one direction without creating a deficit in another direction. I still think that will depend upon the effectiveness of the interdepartmental committees and their efforts to see that the optimum and best interests of all are served with a minimum of damage. Regardless who may take authority for this sort of thing, I think you are going to still depend entirely upon a constant interplay of interdepartmental committees.

Mr. CÔTÉ (*Longueuil*): But they do not have to refer to anybody.

Mr. LAING: I would think they are doing the best they can together right now. It may be at one time that advantages for one department may be disadvantages for another, but the fact is they are working together and they are doing the best they can.

Mr. CÔTÉ (*Longueuil*): I know that; certainly they are doing it, but under whose jurisdiction? We do not know. Is there a minister in charge?

Mr. LAING: I would think that is a matter for a recommendation by this committee. I believe that is one of the purposes of the committee. I think you have come right to the point.

Mr. NESBITT: I have one or two questions I would like to ask. Are there any areas in northern Canada or in the territories where extensive spraying is done in respect of mosquitoes and other insects? I refer particularly to the areas where oil and other minerals are being sought at the moment.

Mr. MAIR: Not so far as I am aware. I think the areas being sprayed in the north are relatively limited.

Mr. NESBITT: Then there is no extensive spraying at the present time in the north, say in the mining areas?

Mr. MAIR: Not on an extensive basis.

Mr. NESBITT: I realize that your research in this area is rather limited, but have you found any indications of a build-up of residues of these stable compounds used in insecticides; have you found any build-up of these residues in any of our major water systems in the north? I refer to the Mackenzie river, the Coppermine area, and such places.

Mr. MAIR: We have no knowledge of that.

Mr. NESBITT: Have you found any build-up of these residues in any waters in the northern areas?

Mr. MAIR: Not that I am aware of. Someone from the Department of National Health and Welfare may have knowledge on this. We have no knowledge.

Mr. NESBITT: It is my understanding that the population of a number of species of birds is decreasing in Canada. Some of these are not game birds, but rather birds such as robins and others which perform a valuable service through eating insects. Could you confirm whether or not this allegation is correct?

Mr. MAIR: I think it has been said that when there are specific instances where local populations have been seriously reduced, so far as we are aware through the use of certain insecticides, and through robins in particular picking this up through earthworms, and so on, that it would not be possible for anyone to say with complete confidence that a general population has been reduced by this means. There is grave concern in the United States because their national bird is declining in numbers. They are considering now that it is almost on the list of birds which are in danger of extinction; this is the bald eagle. There have been cases where dead eagles, eggs and so on, have indicated a very high level of these residues. It is possibly the most sketchy evidence; but in Canada, and here in Ontario the eastern bluebird has declined very seriously in numbers, and you will hear people say that this is because of the increased spraying program in respect of orchards and along the roadsides. That is pure speculation at the moment, but it may be so.

Mr. NESBITT: The decrease may be due to other causes, but it also may be assisted by the spraying.

Mr. MAIR: This is so.

Mr. NESBITT: There are other birds which are insectivorous or those which eat weeds or seeds whose populations have been decreasing through the use of insecticides. I realize there is no positive evidence as yet, but are there any of these other birds, perhaps robins, in respect of which there is any reason to suspect that their populations have been perhaps decreased or assisted in their decrease by the use of spraying?

Mr. MAIR: I would not wish to state that this is so. I do not think we have any evidence which would warrant our stating that this is so.

Mr. NESBITT: Have you any indications in respect of game birds such as the ruffed grouse and other members of that family which are found on the prairies? Have the populations of these been decreasing in recent years for perhaps a number of reasons?

Mr. MAIR: Most of these populations rise and fall for their own reasons.

Mr. NESBITT: I realize this.

Mr. MAIR: Therefore I think you could not pin it down to that.

Mr. NESBITT: You do not feel that at the moment there has been any reduction of the upland game birds as the result of the use of insecticides?

Mr. MAIR: With pheasants I think this would be so, and possibly with Hungarian partridge; but not generally across the country.

Mr. NESBITT: In certain specific instances of certain species?

Mr. MAIR: Yes.

Mr. NESBITT: Do you think there is an increasing danger through this? I realize this is purely an opinion, but I am asking for your opinion as a professional person. Do you think there is a danger if the present methods are continued?

Mr. MAIR: I think that so long as they continue to use chemical pesticides that are very stable, it is inevitable there would be some build-up of this material. Although we do not know yet, I think it follows, if these chemicals remain stable and toxic in the soil for two, three or five years, that with constant re-application you set the stage for possible losses either directly or through the reproductive capacity of these creatures. It might not just affect birds, but also mammals. I think this is really saying what could happen simply because you are setting the stage for it; I would not say it would happen.

Mr. NESBITT: Should there be a marked decrease in bird populations as a result of the use of insecticides, would this not cause a rather serious problem in various fields, for instance, agriculture. I am thinking of birds which eat insects and weed seeds.

Mr. MAIR: I think this is so. Research has been done in past years in an attempt to demonstrate a sort of direct relationship between birds and insects and between the hawks, owls and mice. The research has proved to be less than entirely convincing because there are so many variables in it, but I think on the basis of the evidence we have before us that we would have to say any serious decline in the birds would have a noticeable effect on the other populations which interact with them, insects and so on.

Mr. NESBITT: There is one more question I would like to ask you and then one which I think would be more appropriate for the minister. I understand, from the evidence I have heard this morning and at other meetings, that where these stable compounds such as dieldrin and the like, and other toxic compounds, build up in the systems of birds, sterility is the effect. Is that correct?

Mr. MAIR: This is so, with birds at least. Most of the tests have been carried out and there is a very positive loss of reproductive capacity.

Mr. NESBITT: Would it be reasonable to expect that the same thing might happen to human beings?

Mr. MAIR: I would not care to answer that.

Dr. T. H. PATTERSON (*Chief of the Occupational Health Division, Department of National Health and Welfare*): I do not think that any of evidence that applies in respect of the animal experiments has been explored in relation to humans.

Mr. NESBITT: I realize that; but would it be reasonable to expect that this could happen?

Mr. PATTERSON: It is possible; but it would actually take some years of observation.

Mr. NESBITT: Would you say it is possible or probable?

Mr. PATTERSON: I could not say.

Mr. NESBITT: My last question is directed to the minister. In view of the fact that at this and other meetings with various ministers it has been indicated there is at the present time in this country a certain lack of facility for increased research in these various fields and related fields, not only in this department but in other departments such as the national health and welfare, fisheries, and the like, could the minister tell us whether there is any intention so far as he is concerned—I do not suppose he can answer for his colleagues—of having increased research facilities in this field?

Mr. LAING: Well, I would answer that by stating that I always thought that the more progressive methods in the way of legislation came out of cradles such as this committee, and I would think the recommendations of this committee would have a great deal to do with subsequent action by the government.

Mr. NESBITT: I appreciate that and I certainly agree with the minister. But, until the recommendations of this committee are introduced, there are at present no plans for expanded research.

Mr. LAING: I am basing my judgment upon what I have heard this morning when I say that I think, in the absence of adequate study and research, there is an awareness among all the departments of the danger that exists at the present time and that currently we are doing the best we can through our interdepartmental committee.

Mr. NESBITT: I think we do agree on that.

Mr. LAING: I would think we are primarily looking backward instead of forward, and I would think that what you are suggesting by way of research and so on is another matter in which recommendations could be put forward. I do not think we should begin to look forward instead of looking at the results of what has happened in the past.

The CHAIRMAN: Have you a question, Mr. Willoughby?

Mr. WILLOUGHBY: Mr. Chairman, if you wait long enough in this committee all your questions are answered in due time. All I can say is that what I intended to ask about an hour ago was the same question that has been asked in the last ten minutes. However, I would like to make one comment now. We have listened with a great deal of interest to the witnesses who have appeared at our different meetings. I do know they are doing an excellent job with the facilities they have to work with. But, along the line we have been discussing this morning, we did hear evidence to the effect that their department has one man who has too much work to do and he cannot do it properly. I think one thing shows up clearly from all our meetings—and this has no reflection on any department—and it is this: it seems to me we need a central agency to co-ordinate all this work so as not to overlap it. We do not want a duplication of services in connection with our research program. That is one of our problems and it may be that we should consider making a recommendation in that connection. I was going to ask the minister whether that had been considered; however, he already has answered it.

I have no further questions, as everything has been thoroughly discussed.

Mr. WHELAN: Mr. Chairman, I am somewhat confused at this point. The general theme of the remarks this morning has been to the effect that our wildlife populations seem to be going down. I directed a question about pesticide residues being found in wildlife. I asked how it was that this was found in migratory game and the answer was that in western Canada they use a lot of spray. If that is the case, how do you account for the fact that

our duck population has increased so much, especially in western Canada where a great deal of spray is used for grasshoppers and so on? The situation out west and in parts of the United States has been so good that they have allowed hunters to take more ducks home. If this is supposed to have an effect on the fertility of wildlife how does it come about that there has been an increase in the population?

Mr. MAIR: One of the most serious problems facing us at the present time is that we know that these chemicals are being used, and we know from laboratory tests what the effect can be, what the impact can be, but what is bothering us in that we do not know what the long term effects are going to be. As I said, our population of ducks and others go up and down over the years. We hope the water fowl are on the increase again. We had a good increase this year. With the increase in water they seem to be coming back. But, we do not know what percentage of them may be carrying what level of any pesticide, and this is a serious problem. We just cannot come to grips with how serious the problem is because we do not have the data.

Mr. WHELAN: But you said if there was a high concentration the chicks would not live. If that is so, what is the reason for the tremendous increase in wild ducks in heavily concentrated areas where they use pesticides and that sort of thing?

Mr. MAIR: We do not know at the present time what percentage of the ducks already have developed these levels of residues, how many of them have taken it up and how many have not yet been exposed to it, and we do not know what the levels are in them. We do know, however, that the particular pesticide that was used in the prairies for a number of years is a health hazard.

Mr. WHELAN: Do you think they build up an immunity to it?

Mr. MAIR: We have no reason to believe this is so.

Mr. WHELAN: Well, I am still just as confused. You said that the Royal Canadian Mounted Police helped to control pollution; could you advise us how many charges they have laid in so far as pollution is concerned?

Mr. MAIR: I cannot tell you that offhand, but it would not be many. It would be only a handful over the years. This has to do with oil pollution largely in the case of our act. There is the very serious problem of proving which craft the oil came from or which oil refinery it came from. There is also the added problem of proving it was done knowingly, which is a condition of prosecution under our act.

Mr. LAING: Is it not a fact, Mr. Mair, that the inference in respect of the population of animals and birds being reduced by hunters is all wrong, as they are the least effective of any in the reduction. I am told that the answer to your duck problem is that conditions this past year have been good. For the last many years these conditions have not been anything near as favourable as they were this year.

Mr. WHELAN: But those were the same ducks that were around last year, which laid the eggs this year, and they should have been sterile according to the evidence.

Mr. LAING: Well, I do not think my officials or the others said that this is the case. They did indicate that in respect of certain animals and birds there was this fear which, I think, is a real one. However, they did not say it was proven. But, where you get ideal natural conditions for expansion this overcomes for a time all other onslaughts on the birds such as diseases or the hunter.

Mr. WHELAN: You said the hunter was the least effective eradicator of wildlife.

Mr. LAING: I would think he is.

Mr. MAIR: Again, it depends on the circumstances. When all conditions are favourable to the birds and so on the hunter probably only takes off the surplus which would die anyway—and this is why I think, one cannot argue against hunting.

Mr. WHELAN: We have heard evidence to the effect that we have only one man to check on this. But, in our area we have five R.C.M.P.'s checking on one hunter.

Mr. ROXBURGH: It already has been pointed out that by the use of dieldrin and aldrin and the others there has been a drastic effect on wildlife; that our Canadian group have done away with these and taken on other insecticides which do an equally fine job. Could you tell me if this work is being carried on equally effectively in the United States, or are they still using heptachlor, dieldrin and other spray programs?

Mr. HURTIG: Well, the United States is a free country; there are some positive as well as negative actions being taken. The picture is not as clear there because there are 51 states involved, which means there are state rights involved in connection with these programs. We discussed the situation earlier of woodcock. As a result of the unfortunate effects of heptachlor on woodcock the United States department of agriculture people, in collaboration with the wildlife people, have come up with another compound, and not only another compound but another method of application of it which would completely minimize the hazard to the wildlife in the area. I am just using two examples to show the positive and negative results of it, because there are hundreds of them.

On the other side, the federal government in the United States, in contrast to the federal government in Canada, carries out and supports operational spray programs, which we do not here. In some areas you cannot abandon the use of a particular compound because there is no suitable replacement and, in their assessments of benefits, forest hazards and so on being what they are, after consulting the other departments involved they have had to go ahead continuing the use of the compound involved until they get a suitable replacement.

Now, an example of where they have another suitable replacement is in some of the forest spraying areas of the pacific northwest, where they were getting contamination of oysters as a result of D.D.T. treatment of the watersheds. In this case they switched over to the use of another material. But, this is a very slow process. The mere finding of a residue in the amount of "X" parts per million is not sufficient to discontinue a program if there are grave consequences as a result of that, there must be some data produced on hazards as well. As I say it is a slow matter.

Mr. ROXBURGH: Then, as I understand it, you actually have done away with heptachlor, dieldrin and aldrin and that type of material for sprays on a national scale.

Mr. HURTIG: That is not true.

Mr. ROXBURGH: Well, I think if you will check the notes you will see that it is. I put a question earlier in respect of the damage they did to wildlife and asked whether you had done away with that type of spray and used another such as D.D.T. and others, and I believe you mentioned another spray that was being used.

Mr. HURTIG: You asked a question earlier in connection with forest spray operations. You asked whether we used aldrin, dieldrin or heptachlor compounds for forest spraying operations and my answer was we had never used it for that. I take it that your question was restricted to forest spraying?

Mr. ROXBURGH: Well, I guess maybe it was. I am not thinking of orchards or anything of that nature. However, I guess you are right in that connection. As you know, the birds go back and forth across the border and, in view of the spraying operations existing in the United States, does this mean that we are carrying out a program which can be practically killed by our friends south of us through the use of these sprays?

Mr. HURTIG: I believe Mr. Mair pointed out this is a matter that comes under the international migratory birds convention, and it is their function to draw it to the attention of the appropriate authorities.

Mr. ROXBURGH: Is that being done?

Mr. MAIR: Oh, yes. There has been a good deal of exchange on this subject.

The CHAIRMAN: Are there any other questions gentlemen? If not, I would like to thank Mr. Laing for coming this morning and bringing his officials along with him.

I would ask the members of the committee to remain for a few minutes in order that we may go through some procedural matters before we adjourn the meeting.

The first thing I would like to mention is the schedule that has been laid down tentatively for our future activities. There is no witness available or ready to be called this coming Thursday, and it was the feeling of the steering committee that everyone would probably prefer to have the day off rather than to attempt to just sit and discuss what we have accomplished to date.

If I may go through very quickly the future schedule of what will be coming before us, I will do so. There will be no meeting on October 31—that is, this coming Thursday; a week from today, November 5, Mrs. Gray, the representative of the consumers association of Canada will be here. It will be a relatively brief meeting. I understand she will have a short statement to make. In connection with the meeting on November 7, I would like the consent of the committee to move that meeting to Friday, November 8, for the convenience of one or two witnesses, such as Professor Brown, head of the department of zoology, University of Western Ontario. We have also asked the government of Manitoba for permission for their provincial entomologist to appear on that date. He is going to be in Ottawa on other business. It was our hope that perhaps if we had Doctor Brown in the morning we could have the provincial entomologist on Friday afternoon, perhaps at 2.30 o'clock.

Mr. NESBITT: Do you think it is likely that Doctor Brown, who is quite an authority on the subject and has quite strong thoughts, would be finished in time for the other witness to proceed.

The CHAIRMAN: I would hope so; if not, we could still take part of the afternoon for that. He had said he would come for the day. As I say, that would be Friday the 8th rather than Thursday. On November 14, we have the Canadian Federation of Agriculture; on November 21, a representative of a manufacturer who manufactures pesticides and insecticides, namely, Cyanamid of Niagara Falls; November 26, the Canadian agricultural chemical association will present a brief.

Now, the Chairman was instructed to get more information from the steering committee in connection with the possibility of our visiting the Cyanamid plant at Niagara Falls in order that we could see where they manufacture insecticides and pesticides. I have been unable to do this to date and I am wondering if it was the consensus of the committee that we should carry this through, or do you think there would be nothing to be gained by it.

Mr. NESBITT: Is there any similar plant which is perhaps a little closer?

The CHAIRMAN: Not to my knowledge. I checked and I understand there are no such plants in the Ottawa area. The closest one is probably Montreal.

Mr. NESBITT: Well, that would be closer than Niagara Falls.

The CHAIRMAN: We are going to Montreal later on this year and perhaps it would be possible to combine it.

Mr. NESBITT: That would seem more likely, because most of the members are very busy. It is not that Niagara Falls is not as nice, it is a matter of time.

The CHAIRMAN: The possibility arises that we might be able to get some transportation down there.

Mr. NESBITT: Is Mrs. Rachel Carson going to be invited to come?

The CHAIRMAN: Mrs. Carson?

Mr. NESBITT: Yes, Mrs. Rachel Carson.

The CHAIRMAN: It was not our intention of doing so. The steering committee never considered it.

Mr. NESBITT: This is what started the whole thing.

Mr. CASHIN: Perhaps we will get autographed copies of her book.

The CHAIRMAN: This is of course up to the committee.

Mr. MITCHELL: That is up to the steering committee.

The CHAIRMAN: I was instructed by the steering committee to approach several groups to find out if they wanted to appear as witnesses. I approached the National Research Council but was informed they have no one or anyone who is working now on insecticides or pesticides, or in any related subject.

Now, briefly, I would like to report on the steering committee report, the second meeting held in my office, Friday, October 25. Those present were Messrs. Harley, Mitchell, Baldwin, Orlikow and Roxburgh. We considered the following topics: days and hours of sittings; quorum; list of witnesses to be called; invitation to visit the Cyanamid plant at Niagara Falls, Ontario.

Then, the following is the report. I will read it all through and then you can discuss it.

The subcommittee recommends:

1. That the days and hours of sittings remain unchanged for the time being; but
2. That the committee meet Friday, November 8, instead of Thursday, November 7, to hear Professor A. W. A. Brown, head of the department of zoology, University of Western Ontario, London, also the provincial entomologist of Manitoba, if he is available that afternoon.
3. That notwithstanding the resolutions passed by the committee on August 1 and October 15, the quorum be set at 9 members.
4. That the committee complete part (a) of its order of reference and present an interim report on the hazards of food contamination from insecticides, pesticides and other noxious substances.
5. That the safety of drugs be studied before the cost, although the committee members will have the privilege of asking questions from witnesses who could give information on both the safety and the cost of drugs.

That was the report of the steering committee. We will require a motion that this be carried, but I assume there will be some discussion on it.

First of all, there is the days and hours of the sittings. It has been suggested that they remain unchanged. More or less we have filled a tentative schedule to Christmas, and it was our feeling that to try to change the days and hours of sitting would not be much more successful than they are at the present time.

Mr. RYNARD: If you are going to sit at 10 o'clock on Tuesdays then you are going to have problems. I have a problem this morning; they phoned and wanted me over in the railway committee. They required me to make up a quorum. The thing is are we going to carry on, being short in members, or are we going to cut them down to the point where they are completely ineffective. I do not think you should have only three or four people on a committee such as this. I think you will have to change your times and that someone at the top should correlate all these committees so they may be able to function properly.

The CHAIRMAN: I agree completely with you. It was my hope that tomorrow I would speak to the house leader and the government whip to see if someone would not correlate these meetings so that they are not happening at the same time. It would be my hope we could get one person to whom a chairman could go and say: Look, I want a meeting; what day and time is available? In my opinion, this is a more intelligent way of approaching it.

Mr. WHELAN: Did you want a motion for this so you could discuss it?

The CHAIRMAN: No, we do not need a motion to discuss it.

Mr. MACALUSO: I am in complete agreement with the previous words spoken. I am a member of the railways canals and telegraph lines committee and I have not attended one meeting yet. We have only 24 members here and I do not think the answer is reducing the quorum. They have reduced it from 13 to 10, and now 9. I think you are making it too easy for the members. Something has to be done as far as correlating the hours is concerned. It just has to be changed, as that is the only answer.

Mr. WHELAN: I do not think it is going to do any good by changing it to 9. Why did the steering committee recommend 9?

The CHAIRMAN: The suggestion was that we consider reducing it to 8; it was felt that that was too drastic and nine was mentioned as a compromise.

Mr. MACALUSO: I am all for its being put back to 13 members.

Mr. WHELAN: The banking and commerce committee always meets on Friday and there are three here who attend that. What are you going to do on November 8? I think you had better make sure that there are members put on this committee so that we will have a quorum. It is going to conflict with the banking and commerce committee. They met last Friday and sat all day.

Mr. VALADE: I would like to state, Mr. Chairman, that in some instances the quorum is too high. As you know, in this committee we are studying different aspects of food and drugs. For instance, in connection with pesticides my interest happens to be very remote. My concern is with drugs, and I would make a bigger effort to be here when that is being discussed. But, in the case of pesticides being discussed I, as a member of this committee, am not particularly interested in being here because I do not know about the implications of it. Because of this I do not see why you should increase the quorum. As I said, we are discussing three subjects.

The CHAIRMAN: I do not think we can raise the quorum because, if we go on past history, a great many of these meetings would have had to be cancelled and it would have been slightly embarrassing to us.

Mr. RYNARD: Leave the quorum at 10, as you have it.

Mr. NESBITT: If you have it correlated you will have no problem.

Mr. MITCHELL: I agree with Mr. Macaluso when he said that we should leave it at 10. In fact, I suggested that in the steering committee meeting. The reason I suggested that is that we have some very able witnesses who will be appearing before this committee and I do not think a quorum of 8 is sufficient to listen to an expert witness. I think it is kind of a slap in the face to a

witness of that nature. I think we should have good representation. But, how to get a quorum is another question. I do not think we should reduce the quorum, by any means.

Mr. CÔTÉ (*Longueuil*): Some of the members have not attended one meeting yet. Perhaps you could ask them if they are not interested to change with someone else on another committee.

The CHAIRMAN: This has already been done. I gave the government whip a list of the people, showing how many meetings they had attended; and I requested that those people who were not really interested in this committee be replaced. This has not produced any action as yet.

Mr. CÔTÉ (*Longueuil*): When did you make that suggestion?

The CHAIRMAN: Last week.

Mr. ENNS: Another concern that has been expressed is that we do not keep the deputy ministers waiting half an hour or so before we start the committee.

May I make a suggestion? May I suggest, in order that we do not have to face Mr. Mitchell's and Mr. Roxburgh's backs, that we put the tables together and have people sitting on two sides only. If the tables were put together it would make for a better use of the room.

The CHAIRMAN: That is a good idea.

Then, gentlemen, the first recommendation is that the dates and hours of committees remain unchanged for the time being. I will approach the house leader to see what can be worked out.

Agreed.

The committee will meet on Friday, November 8. We have committed ourselves to this day. We hope to get a quorum. I realize some of the members will be at the banking committee.

Mr. ROXBURGH: The reason for that is that Mr. Brown could not come on any other day.

Mr. WHELAN: Did he have any more important commitment?

The CHAIRMAN: He has a teaching schedule.

Mr. WHELAN: I did not think there was any more important position in Canada than that of elected member of the House of Commons. He should come on Thursday.

Mr. ROXBURGH: If he has other commitments I think he can come on Friday.

The CHAIRMAN: He has certain other commitments. He can keep his commitments provided he can come on Friday.

The steering committee recommends that we present an interim report on insecticides and pesticides and that we study the safety of drugs.

Mr. MACALUSO: I do not see any sense in presenting a report until we have completed our work on pesticides.

The CHAIRMAN: By then we will have finished. We will have finished by the end of November. No one knows how long the Christmas recess might be, so the committee recommends that we tentatively think of calling witnesses on the safety of drugs around the first of February or the end of January.

With regard to the question of reducing the quorum to nine, I gather the feeling of most members is that we leave it at ten. May we have a motion that the report of the subcommittee on agenda and procedure presented this day be now concurred in.

Mr. CÔTÉ (*Longueuil*): I so move.

Mr. RYNARD: I second the motion.

The motion agreed to.

The CHAIRMAN: We have a document entitled "Benefits from Pesticide Use". I would like to have a motion that the document presented by Dr. Hurtig of the Department of Agriculture, called "Benefits from Pesticide Use" be printed as an appendix to this day's proceedings.

Mr. BASFORD: I so move.

Mr. CÔTÉ (*Longueuil*): I second.

Motion agreed to.

The CHAIRMAN: Are there any other matters any members would like to bring up? Then we will adjourn the meeting until one week from today.

APPENDIX

BENEFITS FROM PESTICIDE USE

In the current preoccupation with the hazards associated with pesticide use, there is a tendency to ignore the resulting benefits. Since the benefits derived from the control of insect-borne diseases, reduction of loss of food and fibre and the economic returns from pesticides use have been so simply apparent, up until recently it has not been necessary to subject the various uses of pesticides to the cost-accounting procedures employed by many industries. Consequently, accurate statistics are not readily available on the dollar value of benefits to our economy, health and comfort.

Reference has already been made to the near freedom of Canadian urban areas from fly-borne dysentery made possible by a combination of improved sanitation and pesticides. Many other public health problems can also be prevented or alleviated only through the employment of pesticides as indispensable tools. Canadians are now not too concerned about fleas, cockroaches, bedbugs, ticks or lice. The reason is that now the use of modern pesticides prevents the broad scale establishment of these disease carriers in Canadian urban areas. Bubonic plague, sylvatic plague, encephalitis, typhus and many other diseases of minor or no importance in Canada today could become real public health problems if modern pesticides (including rodenticides) were not available. The residents of the interior of British Columbia are highly aware of the menace of tick-borne paralysis; those of the southern prairies still fear tick-borne Rocky Mountain spotted fever and tularemia; in 1963 mosquito-borne western equine encephalitis appeared once more to remind us of the serious outbreak of the 1940's. Major irrigation and power projects on the prairies will create new breeding areas for mosquito vectors that will be too costly to correct by engineering and land drainage alone. Consequently the main preventative approach available will be expanded use of prophylactic treatments with insecticides.

Clearly pesticides make important contributions to the comfort of man and animals, to their peace of mind and sense of well-being.

These hearings have already devoted a great deal of attention to one important aspect of the Food and Drugs Act, i.e., the control of pesticide residues in food. There is another regulatory responsibility under this act that in part requires the use of pesticides in order to maintain the standards of sanitation, wholesomeness and quality of our food supply. The amount of food detained, treated, or refused entry into Canada due to insect infestation, contamination with insect filth or parts, rodent damage, rodent urine or droppings is far greater than the small number of violations arising from excessive pesticide residues. The present system of commercial storage, processing and distribution of food and fibre products would be virtually impossible without pesticides, due to excessive spoilage, insect damage and reduction of quality. Microbiological spoilage of milk and poultry products during processing would be a serious problem without chemical sanitizing agents and pesticides in the processing plants. In addition to the loss of quality and direct damage that the housewife would not accept, food costs would rise and national dietary standards would suffer. Everyone concerned, the farmer, processor, retailer and consumer would object strongly to these increased costs.

Ultimately, the process of decision-making in pesticide use must be integrated with economic factors, public health and sociological considerations (1). The effects of forest spraying on salmon in New Brunswick have been mentioned in these hearings, but as yet little has been said of the grave sociological consequences of failure to control the spruce budworm by the tools available

at this time. The long term consequences could result in the disruption of industry and in substantial social welfare payments to the residents of the pulp and paper towns dependent upon the forest for a constant, uniform supply of wood. Another benefit of pesticide use in the forest industry is developing in connection with wood harvesting operations. In order to make the most economical use of resources and provide a more stable employment situation for pulp-cutters, the industry is developing year round cutting of pulp wood. One of the limiting factors to maintaining staff in the bush is the summer biting fly problem. The only practical method of providing protection to these workers is the judicious use of pesticides applied to breeding sites of mosquitoes and black flies.

With modern living providing more time for recreation and travel, freedom from the nuisance of insects in recreational areas is not merely desirable, but quite necessary if tourism is to be promoted. Brush and weed control through the use of selective herbicides on highways are not only economically desirable but also considered to be important safety measures on today's high speed traffic arteries.

Despite the fact that local pests and diseases present a constant threat to our food supply and health there is another aspect of pest control that is equally important and may be overlooked. This is the prevention of the introduction of new pests and diseases into Canada from foreign countries. Increased foreign shipping made possible by the St. Lawrence Seaway and increased speed of travel by jet aircraft have complicated the problem of detecting and intercepting foreign pests and preventing their spread in Canada when they do establish a foothold here. Also, in order to maintain the high reputation of exported Canadian agricultural products, a high standard of general cleanliness and freedom from insect contamination is required in trains and ships carrying our products. These plant quarantine responsibilities under the Destructive Insect and Pest Act are administered by the Plant Protection Division of the Department of Agriculture.

Statistics for the past three years show that an average of twenty per cent of ships loading Canadian grain products for export require fumigation, spraying or cleaning. For example, in 1961, of 2156 ships examined 58 ships were partially or completely fumigated, 143 sprayed following recleaning and 182 recleaned only. Many European ships, aware of our strict standards are also treated before arrival in Canadian ports.

Commodities imported from other countries frequently require treatment with fumigants or other pesticides before they can be admitted to Canada. In 1961, these included 1.5 million second-hand bags, 5235 bags of cocoa beans, 8875 bags of peanuts, etc. The fumigation of fruit and ornamental trees of Canadian origin, prior to shipment to other parts of Canada is also required. For example, oriental fruit moth and European pine shoot moth do not occur in B.C. In 1961 fumigation was required in 5030 fruit and ornamental trees and 283 bags of fruit shipped to B.C. At present, we are deeply concerned about the slow spread into Canada from the U.S.A. of three new pests that can have a serious effect on our agriculture and forests in Quebec and Ontario. Five thousand acres adjoining the U.S.A. were treated with Sevin in Quebec in order to limit the spread of the gypsy moth. In Ontario the Japanese beetle and European Chafer are slowly spreading in the southwest. The Plant Protection Division must now rely on intensive pesticide applications in attempting to limit the spread of these serious pests. Some few years ago, in B.C., an accidental introduction of the oriental fruit moth from the U.S.A. posed a serious threat to the Okanagan fruit

industry. Prompt action to stamp out the infestation and strict quarantine eliminated the threat in one year. This would not have been possible without careful planning of the intensive use of selected pesticides.

The benefits from pesticide use in agriculture have been so apparent to users that few detailed statistical studies have been needed to demonstrate the dollar values derived. Some statistics are available based on observations made by experienced scientists and administrators. In a few cases data are available from controlled experiments into which the economic aspects have been included. The total average annual loss of agricultural production due to insects, diseases and pests in Canada has been estimated at 1,300 to 1,400 million dollars (2), an amount equivalent to one-third of the annual agricultural product. Recently, the average reduction of yields of cereals in Manitoba due to weeds has been estimated at 14 per cent (3). In addition the protein content of wheat in weedy fields was significantly reduced (4). The returns from herbicide treatments in cereal crops are available. In 1953 expenditures of about 6 million dollars for herbicides for treatment of 12 million acres increased the value of the crop harvested by 32 million dollars (5). On this basis the increase in value of the crop harvested on 22 million acres treated with herbicides in 1960 at a cost of less than 8 million dollars for chemicals was 58 million dollars. For the 14 years 1947 to 1960 that herbicides have been in general use the increase in production was valued at 460 million dollars.

In 1951 Prince Edward Island recorded a loss of one million bushels of potatoes due to inadequate application of fungicides for protection against late blight. Since then, more attention is paid there and elsewhere in Canadian potato producing areas to the proper timing and application of fungicide. Marketable apples, potatoes and tomatoes could not be produced in large areas of Canada without the use of some pesticides. The amount and type of pesticide required varies with the nature and severity of the problem and the regional conditions. Peaches and cherries would almost disappear from our markets; a number of diseases that infect grapes, cranberries and raspberries could not be controlled without the use of pesticides. Seed treatments for the control of wireworms have resulted in annual increased production of wheat in Alberta and Saskatchewan of an estimated seven million bushels (6). In many areas of Canada, commercial production of table potatoes and root crops was not possible until soil pesticides were developed for the control of wireworms and root maggots.

In Saskatchewan in years of severe grasshopper outbreaks (1949 and 1950) savings of 90 million dollars of crops have been attributed to the chemical control of grasshoppers for an expenditure of 2.12 million dollars for chemicals (7). Similar and greater returns have been obtained in subsequent years.

Crops of lettuce, carrots and celery have been severely damaged or completely destroyed by aster yellows virus disease on several occasions. In 1957 this disease also caused a 15 per cent reduction of the yield of flax in the prairies. Control of the insect vector of this disease is possible by use of insecticide applications. New materials are now available that allow frequent protective applications to vegetables without any harmful residues resulting.

Rodents cause about as much loss of crops and produce as insects. The Canadian loss has been estimated at at least 300 million dollars annually (2). A rat eats five dollars worth of food each year and causes another 15 dollars' loss in wasted produce, damage to buildings and damage to food containers.

Losses in livestock production due to attacks on livestock and poultry of a variety of pests have been placed at 100 million dollars annually (2). This is reflected in unthriftiness, lowered production of milk or reduced weight gains and mortality resulting from attack from blood sucking insects. There is also

a reduction of value of meat and hides, injuries and reduced milk production from gadding, etc., caused by warbles; ticks, lice and flesh flies account for other losses. These losses are being reduced in those areas where modern pesticides are being employed, but statistical studies on the economic benefits are not available. Livestock growers using the new chemicals now available readily see the general improvement in both meat and breeding animals.

A more general appraisal of the current trend may be more significant than further examples of specific savings from pesticide use. The labor force in agriculture has decreased from 1.3 million prewar to one million in 1950 and less than 750,000 in 1960. The number of farms reported in Canada have decreased from more than 700,000 with an average acreage of 240 acres in 1941 to slightly over 600,000 of 280 acres each in 1951, to 481,000 with an average of 300 acres in 1961. Still only about five per cent of the total land area of Canada is used for agricultural purposes. By contrast, one farm worker in Canada in the pre-war period produced sufficient food to feed 10 persons; in 1950 this was increased to 14 persons and in 1960 to 26 persons. The output per acre was about 25 to 30 per cent higher in 1960 as compared with prewar. These improved levels of productivity could only have been achieved through advances in the technology of production which include the use of electricity, fertilizer, new varieties of crops, pesticides and labor saving devices for their application.

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- (3) G. Friesen and L. H. Shebeski, "Economic Losses Caused by Weed Competition in Manitoba Grain Fields—I—Weed Species, their Relative Abundance and their Effect on Crop Yields", *Canadian Journal of Plant Science*, Vol. 40, 1960, pp. 457-467.
- (4) G. Friesen, L. H. Shebeski and A. D. Robinson, "Economic Losses Caused by Weed Competition in Manitoba Grain Fields—II—Effect of Weed Competition on the Protein Content of Cereal Crops", *Canadian Journal of Plant Science*, Vol. 40, 1960, pp. 652-658.
- (5) E. G. Anderson, "The Economic Value of Herbicides to Canadian Agriculture", *Proceedings First Annual Meeting Agricultural Pesticide Technical Society*, Macdonald College, Quebec, June 21-24, 1954, pp. 55-58.
- (6) Data supplied by Alberta and Saskatchewan Departments of Agriculture based on 1953 seed treatments for wireworm control. (Cost-benefit ratio has improved since 1953 with reduction in cost of treatment by one fourth to one third).
- (7) H. McDonald, "Insect Losses, Control and Savings to Field Crops in Saskatchewan", *Proceedings Sixth Annual Meeting Agricultural Pesticide Technical Society*, Winnipeg, Manitoba, June 22-25, 1959, pp. 20-24.

A comprehensive treatment of the Canadian problems in disease and pest control, and resulting savings is available in: A. P. Arnason, "Disease and Pest Control", *Resources for Tomorrow*, Supplementary Volume, 1962, pp. 31-67.

HOUSE OF COMMONS

First Session—Twenty-sixth Parliament

1963

SPECIAL COMMITTEE

ON

FOOD AND DRUGS

Chairman: Mr. HARRY HARLEY

MINUTES OF PROCEEDINGS AND EVIDENCE

No. 9

TUESDAY, NOVEMBER 5, 1963

WITNESSES:

Mrs. A. F. W. Plumptre, National President of the Consumers' Association of Canada; Mrs. Roslyn Grey, Chairman of the Committee on Pesticides of the Consumers' Association of Canada; and Dr. C. A. Morrell, Director of the Food and Drug Directorate, Department of National Health and Welfare.

ROGER DUHAMEL, F.R.S.C.

QUEEN'S PRINTER AND CONTROLLER OF STATIONERY

OTTAWA, 1963

SPECIAL COMMITTEE ON FOOD AND DRUGS

Chairman: Mr. Harry Harley

Vice-Chairman: Mr. Rodger Mitchell

and Messrs.

Armstrong	Fairweather	Otto
Asselin (<i>Richmond-</i> <i>Wolfe</i>)	Gauthier	Pennell
Baldwin	Gelber	Roxburgh
Cashin	Howe (<i>Hamilton South</i>)	Rynard
Casselman (Mrs.)	Macaluso	Valade
Côté (<i>Longueuil</i>)	Marcoux	Whelan
Enns	Nesbitt	Willoughby.—24
	Orlikow	

(Quorum 10)

Gabrielle Savard,
Clerk of the Committee.

Note: Mr. Gelber replaced Mr. Basford prior to the ninth meeting.

WEDNESDAY, October 30, 1963.

Ordered,—That the name of Mr. Gelber be substituted for that of Mr. Basford on the Special Committee on Food and Drugs.

Attest.

LÉON-J. RAYMOND,
The Clerk of the House.

MINUTES OF PROCEEDINGS

TUESDAY, November 5, 1963.

(9)

The Special Committee on Food and Drugs met at 9:50 a.m. today. The Chairman, Mr. Harry C. Harley, presided.

Members present: Messrs. Armstrong, Asselin (*Richmond-Wolfe*), Baldwin, Côté (*Longueuil*), Enns, Gelber, Harley, Mitchell, Otto, Roxburgh, Whelan and Willoughby.—(12).

In attendance: Mrs. A. F. W. Plumptre, National President of the Consumers' Association of Canada; Mrs. Roslyn Grey, Chairman of the C.A.C. Committee on Pesticides; and Dr. C. A. Morrell, Director of the Food and Drug Directorate, Department of National Health and Welfare.

The Chairman welcomed the witnesses.

Mrs. Plumptre made an opening statement, and Mrs. Grey read the submission on behalf of the Consumers' Association of Canada.

After her presentation, Mrs. Grey produced samples of six pesticides which, according to the C.A.C. were improperly labelled or sold in unsafe containers.

Mrs. Plumptre and Mrs. Grey were questioned in relation to the requests mentioned in the brief for better protection of consumers.

Mrs. Plumptre was also questioned about the organization and the work of the Consumers' Association of Canada.

Dr. Morrell was invited to give his opinion on labelling of pesticides, and on the application of the Food and Drug Act in relation to pesticide residues in food.

The questioning being concluded, the Chairman thanked the witnesses, and announced that the officials of the Food and Drug Directorate will be available for a further appearance before the Committee on Thursday, November 28.

On motion of Mr. Asselin, seconded by Mr. Mitchell,

Resolved,—That this Committee call Professor A. W. A. Brown and Dr. J. M. Coon to appear before the Committee on November 8 and November 19 respectively, and that the Committee pay their reasonable travelling and living expenses; and that a per diem allowance be paid to them.

At 11:10 a.m. the Committee adjourned to 9:15 a.m. Friday, November 8.

Gabrielle Savard,
Clerk of the Committee.

EVIDENCE

TUESDAY, November 5, 1963

The CHAIRMAN: Gentlemen we have a quorum and perhaps we could now open this meeting.

I should like to welcome here this morning Mrs. Plumptre, who is the national president of the Consumers' Association of Canada and Mrs. Grey who is associated with her particularly in relation to insecticides and pesticides.

I should like to ask Mrs. Plumptre to say a few words.

Mrs. PLUMPTRE (*National President, Consumers' Association of Canada*): Thank you Mr. Chairman, and gentlemen.

I should like on behalf of our association to thank you for giving us this opportunity to come and speak to you in regard to this problem of pesticides. This has been of great concern to a number of our members, and in 1961 this matter was brought to our attention by a number of delegates from across the country attending our annual meeting in Toronto. At that time we passed a resolution, which is attached to a copy of the brief. This was sent to the government. These people were very concerned because they did not feel the consumer had adequate protection in this field.

At our last meeting held in Winnipeg in June of this year this was again brought to our attention.

The previous fall I was on a tour across the western provinces speaking to a number of meetings, and I do not think there was one meeting which I addressed where I was not asked something about how we are protected in the field of pesticides. What is the government doing? What is industry doing? Is the food we eat safe? These were the kinds of questions I was asked, and this is why these other resolutions were passed which are also attached to the brief.

We are delighted that you gentlemen are giving this problem your serious consideration. We are very pleased that we have Mrs. Grey here this morning who has a scientific background and is also mother of a family and can therefore speak from both points of view on this subject on our behalf.

Mrs. R. GREY: The past year has seen an increasing public alarm over the dangers that the indiscriminate use of pesticides* may have on our society. At annual meetings for the past several years, C.A.C. delegates have passed resolutions expressing concern at the increasing health hazards that may result from improper use of pesticides of a toxic nature. In articles on this subject published in the C.A.C. monthly "Bulletin and the Canadian Consumer", we have asked for better protection for the consumer. It is this concern of our members that has prompted the consumers' association of Canada to present its views and recommendations on the problems of pesticides and public safety to this special committee.

The C.A.C. is grateful to this committee for permitting us to present this brief. We wish to make quite clear at the outset, that the C.A.C. does not oppose the use of pesticides in agriculture. We recognize the usefulness, indeed the necessity for the control of pests and weeds in modern farming. However,

*The word pesticide in this report will include herbicides, insecticides and fungicides.

we are interested in protecting the consumer from the dangers that the misuse of pesticides may have, not only in farming and gardening operations but also in the home.

We feel that there are two main ways in which the consumer can be exposed to the potential health hazard of pesticides. One way is through his misuse of the pesticide, either in farming operations or in the home. He has some degree of control over this by the care with which he uses those products. The second way of exposure, over which the consumer has no control, is through the ingestion of pesticide residues on or in food. The consumer has to rely on the food producer not to misuse pesticides. He relies on the federal government for the detection of excess residues.

In this brief, the consumers' association of Canada presents the following requests for better protection for consumers.

1. Controlled Sale of Pesticides

The C.A.C. would like to see the sale of pesticides restricted to government approved and licensed outlets. We think that the staff of these stores would benefit from an educational program which would enable them to give the proper advice and information to pesticide buyers, both farmers and domestic buyers.

We would like to see greater co-operation between federal and provincial governments in order to effect this restrictive sale. We have learned with much interest of the actions which have been taken in the prairie provinces, especially in Manitoba. We understand this provincial government is co-operating with the food and drug directorate in analysis of foods for pesticide residues; is licensing dealers in pesticides, and is planning to hold dealer classes this winter for all 1964 licenses. We would like to see a similar operation in all provinces.

2. Inspection and Analysis

The C.A.C. recognizes the important work done by the food and drug directorate of the Department of National Health and Welfare in the inspection and analysis of food in order to safeguard the consumer. However, as food producers are making increasing use of pesticides it is becoming physically impossible for the present number of inspectors to inspect enough samples of food for human consumption to ensure complete safety from excess pesticide residues. Therefore the C.A.C. asks the federal government for more inspectors, for inspection over a wider area, and for analysis of more food samples. We maintain that there should be more inspectors to work in the field in order to discover the areas where careless or improper use of pesticides is frequent. There should also be more analysis to examine samples from these areas, as well as more analysts to check samples of imported foods. We would also like to see a greater co-operation between the federal government and the provincial governments in the setting up of more analytical laboratories across Canada.

3. Prosecutions

The C.A.C. maintains that all persons producing and selling contaminated food should be prosecuted under the Food and Drugs Act, and that these prosecutions be given full publicity. We would hope in this way to deter any prospective offenders.

4. Legislation for Better Labelling of Pesticides for Domestic Use

We ask that legislation be introduced to require labelling, especially on products for house and garden use which will give consumers full warning and advice as to use. We believe that the present labelling of pesticide containers available for consumers fails to provide the user with maximum protection. We

would like to see pesticide manufacturers in collaboration with the federal government departments make certain changes in the labelling of pesticide containers, particularly those for use in the house and garden. The precautionary measures and toxic warnings on the present labels play a secondary role to the brand name and efficiency of the product. Precautions and toxic warnings, although generally present on labels, are usually printed in small type and on the back or side of the container. This we consider is not sufficient to impress the consumer with the importance of following the directions given. The words "toxic" or "health hazard" in large type should be displayed on the front of the container, and should refer to directions for use on the side or back of container. The use of protective clothing such as masks or gloves where necessary, should be added to the precautionary measures. Warnings not to use pesticides containing certain chemicals on edible plants should be included in the directions for use. Labels with promotional language misleading the consumer as to the safety of the pesticide, should be deleted from labels of pesticides containing toxic chemicals. Such advertising as . . . "safe for humans, pets, and food" . . . "pleasant odor" . . . should not be permitted on labels of pesticides thought to be hazardous, even if "when used as directed" appears as well on the label. Pesticide containers with labels in French should be mandatory for the French-speaking areas of Canada. In cases of accidental poisoning, antidotes should be given on labels of pesticide containers. Where the antidote is questionable or where there is no antidote for a particular pesticide, directions for emergency treatment should be included.

5. Improved Containers

The C.A.C. would like to see pesticide containers re-designed with a greater regard to public safety. At present the containers with a spray-type discharge tend to drip on the finger that presses the release. As many pesticides are dangerous if absorbed through the skin in large quantities, surely the use of rubber gloves is necessary when using this type of dispenser unless a dripless spray can be produced. Containers of pesticides needed to be diluted in water and placed in a spraying dispenser should have dripless spouts to ensure that while pouring no pesticide spills on the hands.

6. Need for Educational Campaign for Consumers

The C.A.C. maintains that a more intensified educational campaign with respect to pesticides is needed both by the farmer and the householder. Despite the efforts of the government and their agencies to acquaint the farmer with the hazards of over-exposure to pesticides, we understand that cases of farmers poisoned through misuse of pesticides still occur.

For the domestic user, however, there is no organized educational policy. We believe that the consumer is the least well-informed user of pesticides. He can only know what he reads on the label of the pesticide container or in his newspaper or magazine. There is a great need for a brochure on pesticides for public information. We ask that the Department of National Health and Welfare in co-operation with other government departments publish a brochure of this nature. This brochure should include information on health hazards resulting from over-exposure; the ways of possible over-exposure and the symptoms of toxicity; a classification of the different types of pesticides and a discussion of the more dangerous types.

We consider that a well-planned program of educational films, discussions, interviews, and so on, on the use of pesticides should be carried on television and radio stations and in other media across the country. In this connection we would ask pesticide manufacturers to spend a greater proportion of their promotional funds on a campaign for public safety.

7. Research

Our association would like to see more research on the cumulative effects of continued consumption of small amounts of pesticides on the human body. We ask the federal government to undertake a study to find out how much pesticide a person would be likely to consume eating an average diet over a given period of time with the existing tolerances. This would provide the food and drug directorate with a better basis to reconsider and change individual pesticide tolerances set out in the Food and Drugs Act and regulations. We would also like to see more research to develop more selective pesticides less toxic to humans. We ask that the food and drug directorate be given the authority to withdraw from sale the more toxic pesticides if newer and more selective pesticides safer for man are developed.

In conclusion we wish to state that we as consumers must accept our responsibilities regarding the use of pesticides. Under our system of free enterprise, producers and manufacturers have a responsibility for the products they put on the market and for giving users full direction as to their use. Governments also have a responsibility. As a result of the technological developments and rapid scientific advances in our economy consumers have to depend on government and other regulatory agencies for assurance that products on the market can be purchased with safety. Regarding pesticides, governments have a responsibility to see that the products meet legal requirements, especially as to their dangers, and to ensure that food producers who are using pesticides, are putting on the market products which are safe for human consumption. The acceptance of these responsibilities by producers and governments should give consumers protection from pesticide residues in our foods. But when products, particularly those for domestic use, are well-labelled, the consumers must accept responsibility for his own protection from over-exposure through misuse. The importance of all users reading the labels and following directions cannot be over-emphasized. Legislation will help, but legislation alone will not protect us from the dangers of misuse. The educational campaign stressing the importance of consumers co-operation in this regard remains one of the most important needs regarding the use of pesticides.

The CHAIRMAN: Thank you very much, Mrs. Plumptre and Mrs. Grey.

Mrs. GREY: Before proceeding, Mr. Chairman, I wonder if I could produce a few samples which we have brought with us this morning and mention something about them.

The CHAIRMAN: Yes, please proceed.

Mrs. GREY: I consider that some of these samples have rather bad labelling in so far as either misleading information or insufficient information is concerned. For instance, here is one called Kan-Kil. This product is manufactured by Colgates and is a fly and mosquito killer. On the front it says "pleasantly scented" and, in the directions for use it says "repeat as often as necessary". I do not know the number of times that would involve, whether it would be every five minutes, every day or every two days.

My next sample is a tin of Raid. It says it contains methoxychlor, which is a toxic substance.

Mr. ROXBURGH: What did you say it contained?

Mrs. GREY: Methoxychlor, which is considered by some not to be as toxic as D.D.T. However, it is a closely related substance. On the front it says "safe for humans, pets, food when used as directed". On the back it says that you can repeat spraying at frequent intervals.

My next sample is a tin of Ortho rose dust. This powder is contained in a soft plastic container. It contains D.D.T. and lindane which, I think, is

considered by most to be quite toxic. The lid is very loose on this container; it comes off all the time. The container is also refillable. You are supposed to be able to take the end out to refill but if you do the dust comes out and goes all over the place. And, if you squeeze it at all the container is so soft that the powder comes out immediately. I think this is a bad type of sprayer for this type of chemical.

Next is a product called Kelthane which, I think, contains malithion or parathion. This has been bought within the last year. It has no warnings on it except directions on how to use it. It is registered by the Pest Products Control Act. If it does contain malithion it is the same chemical that a child in Vancouver swallowed and subsequently died.

The next sample I have here is a 2,4-D weed killer. Although it contains a chlorinated hydrocarbon it has not yet been proven to be toxic or hazardous. But, if you unscrew this cap on the top you will find inside a little cap which you are supposed to fish out with your finger and use as an ounce measurement. In doing so, the contents of the tin spills over your hand. There is very little information on this container to say what else it contains.

The last sample I have is Kan-Kil which is the same one I referred to earlier but I believe this is a newer product. It is made by Colgates. It is an aerosol bug killer and is marked on the front "pleasantly perfumed". Directions for use are on the back. I am not quarrelling with the type of directions but with the fact that there is misleading advertisements on the front. It says "pleasantly scented" and "safe to use".

Most of these samples I have mentioned have directions in both French and English.

Mr. ROXBURGH: Is there any antidote mentioned on there?

Mrs. GREY: I think in the case of the ortho rose dust with lindane it says:

Harmful if swallowed. Induce vomiting if swallowed. Avoid breathing dust or spray mist. May cause irritation of eyes, nose, throat and skin. Avoid contact with eyes, skin or clothing. In case of contact, flush with plenty of water; for eyes, get medical attention. Wash hands and skin thoroughly after using. Keep out of reach of children. Avoid contamination of feed and food stuffs. Do not use within two weeks of an oil spray treatment.

There should be something on the front of the label to this effect: "caution"; "toxic"; "see back label".

In the case of this Kan-Kil sample it says:

Do not spray on skin, on animals or plants. Avoid inhalation or contact with food or cooking utensils. Remove birds or pets; cover or remove fish bowls before spraying. If on skin, wash with soap and water. Keep away from children. To avoid stains, hold several feet from objects.

The CHAIRMAN: Thank you, Mrs. Grey.

Do any of the members of the committee wish to direct questions to either Mrs. Grey or Mrs. Plumptre at this time?

Mr. OTTO: Mr. Chairman, the topic seems to have been very well covered and, as a result, there do not seem to be too many questions to put. We are at a disadvantage because, first of all, we agree on most of what has been said, and, secondly to cross-examine such beautiful ladies would be something that most examiners hesitate to do.

The CHAIRMAN: Mr. Otto is in the legal profession.

Mr. OTTO: I wonder whether you would have anything to say on behalf of your association in connection with the normal use of any of these products; in other words, is it possible that the manufacturer contemplates the normal use

of the product in the course of various duties around the home and in the garden, which would not make it dangerous to any person. I would agree with you that this may be of some danger to those who are in the business, say, of raising flowers. But, is it of danger to the normal user in the normal course of running the home or gardening?

Mrs. GREY: I think it depends on the individual. The trouble is that many people cannot stand the sight of a bug in the house and they may use these products much more than I would be inclined to do.

Mrs. PLUMPTRE: I think this depends entirely on whether or not the person is an intelligent user. I think you will have to accept the fact that very few people read labels properly. You would be surprised at the number of people who talk to us about the dangers of this and, when you get right down to it, they have not read the label. In my own home—and, one of these cans comes from there—my husband was using one of these products and had not read the label, and this is in our house where we are talking nothing but this sort of thing. We have to educate people and see they are properly informed.

It is my opinion that in the case of all these substances which have toxic properties there should be something on the front to make sure that a person's attention is drawn to it in the store. There should be something of this nature: "caution"; "warning"; "toxic"; "health hazards". It should say: "see directions on the other side" or words to this effect.

I was visiting the United States just last week end and I went into stores just to have a look at their household products. We were concerned not only with the use of insecticides but something which is outside of the work of this committee, the labelling of household products and so on. The United States now have a regulation in connection with all these products and, when you go in and peruse all these products, for instance, furniture polish, moth proofing products and so on, you will note there is on the front label the words "warning", "caution", or something to this effect. The law has different categories and very specific regulations on the degree of toxicity and you have to live up to whatever fits that degree. One product may say "caution" and another says "see directions on side". If you look, you will see it all set out. This cannot help but improve the situation. You will appreciate the fact that we have been carrying on an educational program in an endeavour to try to make people read the labels. We should use our radio and T.V. programs more in order to warn the general public.

In our C.A.C. bulletin we reach a far wider group of women across the country. This is one way of doing it. We have 16 national women's organizations which have a liaison with our organization. These people take our publications and discuss them with their own members. In this way we can reach millions of women.

But the point is that if a woman hears of it in a vague kind of way, it is not sufficient. We must step up this educational campaign. We need more television programs pointing out the dangers. Let us have pictures showing people in their homes and what can happen if they do not follow directions. A woman can take a can of mothproofing and stand in a closed room, or she may have one of these cupboards where you have clothes hanging on either side and no windows, and she will be exposed to these fumes and can be very ill as a result. She would not think of having the window open because perhaps it would not say so specifically or "do this outside".

I might say, that when I was down in the United States and discussed this with some of the people doing consumer work I found that mothproofing, and the use of this kind of insecticide which has fumes and may be dangerous, is one of the things that they were concerned about. Take, for instance, the growth of coin-operated cleaning establishments to which people go to clean a lot of their clothes. They put the clothes in their car afterwards, have no

windows open and can be sick afterwards from the fumes. These are the kinds of things people will not know about unless there is a good educational campaign. You have to remember that although people are getting better, they do not read labels, and we have to make the labels more eye-catching so that people will realize their importance.

Mr. ROXBURGH: Such as a skull and crossbones sign?

Mrs. PLUMPTRE: If you label everything poisonous and you mark a skull and crossbones sign, people will take it for granted. You do not want to use the same thing for everything so that people do not get used to the sign. People can easily say that the government today thinks everything is poisonous. This is what will be the result, You must not go to extremes. You have to be more exact. I think you should make it more eye-appealing so that the consumer will see it when he buys these things.

Mr. WHELAN: Mr. Chairman, first of all I do not know too much about Mrs. Plumtre's organization, but you say you represent 20,000 paid up members. Is that correct?

Mrs. PLUMPTRE: Yes.

Mr. WHELAN: How did you set up your organization? Maybe I should not be asking this at this time but I do not know too much about your organization.

Mrs. PLUMPTRE: We have 20,000 individual paid up members. In addition, we have a group membership, and this is a very important part of our work. We have approximately 500 rural groups—these have to be rural because it says so in our constitution—that consist of rural women who pay us \$5 a year to belong as a group to our organization and to whom we send out our Canadian consumer magazine. When we had a smaller bulletin we used to send out more. These women's groups discuss it at their monthly meetings. There is the women's institute group, and others, and this gives us a good contact with the rural women. In addition to that we have 17 national organizations that are what is known as participating organizations, and they pay us a nominal fee of \$10. Throughout the country, at the national, provincial and local levels, where they have organizations, they will have liaison officers with our local organizations. These people come to the local boards and they go back and report to their own meetings. We have organizations such as the National Council of Women, the Federated Women's Institute, the Cercle des Fermières, the I.O.D.E., and other national organizations of that type. We do have contact with thousands of people through an educational campaign of this sort. One of our troubles is that we do not have a great deal of money.

Mr. WHELAN: You said earlier that you toured western Canada this summer.

Mrs. PLUMPTRE: Last fall.

Mr. WHELAN: And you said that you were asked a lot of questions about what effect pesticides and insecticides had on consumers, people using these products. I am interested in the answers you gave them.

Mrs. PLUMPTRE: No one asked me what is the effect on me if I eat a food with pesticide. If they did, I would say I do not know and neither does anyone else. The things they were concerned about were the people inspecting the products. At that time, as far as we know and I may be corrected in my knowledge of this, there were no prosecutions of anyone selling food with residues of pesticides. This was one of the things we were asking for. We have attached an article from our old C.A.C. bulletin to our brief in which you will see that we were concerned with it. We knew there was some inspection being made but we had not seen any prosecutions and we felt that until prosecutions took place, people would go on thinking it does not matter. As you know, since then, there have been prosecutions. I think this is as it should be, and I think

that when people realize that the government means to enforce regulations they will perhaps give more attention to the way of using these products.

Mr. WHELAN: You point out the food samples in your brief. Have you read our proceedings which we have had so far?

Mrs. PLUMPTRE: Not all of them but some. I know this has been discussed.

Mr. WHELAN: All the answers we got so far end up with the statement that there are not sufficient facilities to test it any more.

Mrs. GREY: That is so. There were 80 inspectors under the food and drug directorate and some of them are analysts as well. This number has been increased to 100, but 100 inspectors across Canada I do not think are sufficient to do pesticide control. It is not possible.

Mr. WHELAN: Are you aware that there are not enough facilities and staff available?

Mrs. GREY: Yes. We asked for this last year in an article in the bulletin; we asked that the number of inspectors be increased. It was increased from 80 to approximately 100.

Mr. WHELAN: You say that you understand that some farmers have died as a result of the use of pesticides. Have you figures on how many farmers died?

Mrs. PLUMPTRE: No. We did not say they died, we said they had been ill. We discussed this with one of our members who is a doctor and we understand that many cases do occur where farmers who use pesticides and do the preparation of the pesticides, inside instead of outside are poisoned as a result. We have no statistics although this concerns consumers and we are concerned with the fact that they have become ill.

Mrs. GREY: This was a problem discussed at one of the earlier committee meetings, whether or not these cases of poisoning actually are reported to the poison control centres. It may be that they are not; perhaps poisoning cases of this sort may not all be reported to the centres, and that is why the dominion bureau of statistics showed a low rate of death owing to poisoning by pesticides.

Mr. WHELAN: In the area I come from education concerning insecticides and pesticides and their use in the production of agricultural products and crops for human consumption is carried out very thoroughly. I do not know if you are aware of this but we have schools all winter long, and if anyone is not aware of the proper use of these pesticides and insecticides, it is his own fault. I would say that both the provincial and federal departments in western Ontario do a very good job on informing the public. If you read the evidence presented here a week ago by one of the doctors, you will see that when I asked him about the professional farmer his answer was that he thought they did a good job in using the insecticides and pesticides. He stated that the backyard good-natured farmer could do probably more damage than the professional farmer by giving his stuff to all his neighbours and using this spray in their backyard. I feel this is true. What do you feel on it?

Mrs. PLUMPTRE: This is definitely true. We had a report from one of our neighbours this summer to say that her neighbour had ruined her garden because she had sprayed when the wind was coming in her direction and it blew across her garden and ruined it. We feel that a great deal more education and better warnings on the labels are essential. I know the Department of Agriculture and some of the provincial people, as we have indicated here, are doing a pretty good job. On the other hand, there is always the proper way, but you cannot make the farmer use those products the proper way; you can only say he should do so. However, there is still a need for educating the people who sell these things in some of the rural areas.

Mr. WHELAN: In the case you mentioned you can control the thing, but you cannot control the good-natured farmer who gives the product away, the backyard moonlight farmer. You have no control over him.

Mrs. PLUMPTRE: You have no control over the others either.

Mr. WHELAN: They are subject to inspection.

Mrs. PLUMPTRE: Yes, when they sell the product and the product gets picked up once, they are not going to do it again.

Mr. WHELAN: You say in your brief that you think their licensing should be studied. Are you suggesting that this backyard farmer should be licensed too?

Mrs. PLUMPTRE: Not the backyard farmer but the outlet should be licensed.

Mr. WHELAN: But he can give this product away.

Mrs. GREY: If he bought a pesticide from a registered dealer, the dealer can make sure, when he sells this product, that the person who buys it knows what he is doing. In that way you will have covered part of the ground. If he wilfully goes against the label, that is another thing.

Mr. WHELAN: Dr. Harley is the chairman. He may prescribe that I take two pills, but I take four. In the same way the man selling the product can tell his consumer to use so much on the cabbage or the cauliflower and he will put double the amount so as to make sure to kill the pests. He then gives the pesticide to his neighbour. I could not do that, as a commercial person, without being inspected.

Mrs. PLUMPTRE: You cannot control people in their own homes.

Mr. WHELAN: The danger is still here.

Mrs. PLUMPTRE: But it is something that happens everywhere. Look at drugs. Dr. Harley may prescribe something and it cures me. I then go to Mrs. Grey and say "Take that, it did me good". You cannot stop people from doing that.

Mr. WHELAN: The city backyard farmer can be more dangerous than the professional farmer.

Mrs. GREY: Except that his produce does not reach as large an area. If you had 100 inspectors there, they would be apt to pick it up.

Mr. WHELAN: I am supposed to make comments on this brief. Of course you are aware that a good amount of food that goes on to consumers' tables comes from other nations.

Mrs. PLUMPTRE: We asked for analysis of imported foods. We think it is important.

Mr. WHELAN: We have butter from New Zealand and Australia.

Mrs. PLUMPTRE: I hope we are not importing butter from New Zealand.

Mr. WHELAN: We did a year ago. We have pork from Poland and a lot of other foodstuffs from other areas.

Mrs. PLUMPTRE: These should also be inspected. This is one of the things we have been asking for. We would like to see more inspectors in this area.

Mr. WHELAN: Is your consumer association prepared to recommend that all foods for human consumption be tested and inspected and that the consuming public absorb these extra charges?

Mrs. PLUMPTRE: You can have a good inspection by spot checking, but you have not got enough of it. This does not mean that every can of foodstuffs coming from another country or every package that goes on the market

has to be inspected. However, you can do a good inspection by having adequate inspectors and a good system of spot checking. The public would be prepared to pay for the safety of its foods. In the last few years there have been so many accidents that people are beginning to realize how important it is.

Mr. WHELAN: This is true. Producers are also aware of this and they do not want to be producing something that would be detrimental to consumers who are buying this product. In our area there have been demands that the experimental farms be expanded to have more laboratory facilities and more testing equipment, not just for pesticides carryover and absorption in products but also for the mineral deficiencies in these plants. You are aware of this, are you not? It has been proven that some of our products are lacking in this, and to find out this takes special equipment. I would hope that your association would go so far as to recommend to the government—and this would be very helpful to the farmers in Canada—that they provide laboratory and testing facilities for mineral deficiencies in these plants because this can be as important to human bodies as anything else.

The CHAIRMAN: Gentlemen, I think this is a good place to mention that Dr. Morrell of the food and drug directorate has agreed to come back before the committee on November 28 for any further questions that the committee may wish to ask him.

Mr. WILLOUGHBY: Mr. Chairman, I think we should congratulate these ladies for presenting such a wonderful and concise brief. From reading the brief one can realize the great deal of effort which has gone into this, as a result of which there is very little questioning necessary.

However, there is one point upon which I would like to be a little clearer. Mention was made of licensed outlets and I would like to ask how they propose to institute such licensed outlets and how they would operate?

Mrs. PLUMPTRE: This is being done in Manitoba at the present time. You will note that mention was made of it in our brief. We have been in touch with the provincial governments from time to time. Before coming here Mrs. Grey wrote again to ask if they felt their licensing system had been helpful. I feel that one should not be able to go into a super market and pick these things off the shelf. I think the sale of these products should be restricted to agricultural supplies and hardware stores.

Mr. MITCHELL: How about drug stores?

Mrs. PLUMPTRE: Yes, I think we could include the drug stores.

Mr. MITCHELL: They handle poisons every day and, in my opinion, would be much more capable of doing so.

Mrs. PLUMPTRE: Perhaps that is true. I think this is something which should be examined very closely by the people who are drawing up the regulations. It is not for me to say. But, I do not think one should be able to pick these things out of the air without first having received some advice as to their operation and so on. I would like to see only those establishments which have licences sell these products. The staffs of these establishments should acquaint themselves as to the dangers involved and then, when someone goes in to inquire about moth proofing clothes and so on, they will receive advice as to how to use the particular product in question.

Perhaps Mrs. Grey would care to read a letter at this time from the deputy minister, Department of Agriculture and Conservation, province of Manitoba.

Mrs. GREY: This is a letter from the deputy minister of the Department of Agriculture and Conservation, which reads as follows:

October 29, 1963.

Mrs. R. Grey,
Chairman,
Committee on Pesticides,
Consumers Association of Canada,
1245 Wellington Street,
Ottawa 3, Ontario.

Dear Mrs. Grey:

I have for acknowledgement your letter of October 23, to Dr. M. R. Elliott, deputy minister of health, which has been referred to this office for reply. I note that you are interested in having some indication as to whether we feel the pesticides control act of this province is reducing the misuse of pesticides.

We are quite confident that the act is leading to a much greater awareness among people involved with the handling of pesticides—this includes manufacturers, distributors, and farmers themselves. We have issued 607 pesticide dealer's licences under this act so far during the current year. You are perhaps aware that the act does not, in the first instance, restrict the sales of pesticides, as you have suggested, but rather merely provides us with an opportunity to be in contact with all those who are selling and using pesticides. While we have found it necessary to prohibit the use of Dieldrin and Aldrin on all field crops and livestock, with the exception of horticultural crops for which a residue tolerance has been established, we still feel that the real strength of our legislation lies in a greater awareness and understanding of pesticides and their use. We plan, for example, to hold dealer classes this winter which all 1964 licencees will attend.

I trust these comments will be useful to you.

Yours very truly,
(Sgd)

W. E. Jarvis
Deputy Minister

Mr. MITCHELL: Mention is not made of the type of outlets.

Mrs. GREY: They are not restricted. In Manitoba anyone who applies for a dealer's licence can, presumably, obtain it providing he pays the fee. It is not a restrictive type of legislation.

Mr. MITCHELL: In my opinion it is not restrictive enough.

Mrs. GREY: By means of this legislation, they are able to keep in contact with those people who are selling the products.

Mr. WILLOUGHBY: Would this restriction not be as effective as having more labelling on the packages? We have no assurance that the person who buys that package is the one who is going to use it.

Mrs. PLUMPTRE: We would like to approach it from the two directions.

Mr. WILLOUGHBY: I can see a great advantage in having thorough labelling on these packages and also, as has been suggested, certain antidotes such as promoting vomiting in case of swallowing certain chemicals. However, as you realize, the person who purchases the package sometimes hands it over

the garden fence to the neighbour and it goes up and down the street, with the result that, as far as small purchases are concerned, they are probably not as effective as an outlet.

Mrs. PLUMPTRE: I have worked in this field some time and it is my opinion that we certainly can improve the situation as it exists today. I think we would all accept the fact that it is very difficult to break the consumers from habits they form in respect to application of these products. It is necessary that the consumer take more responsibility on his own. We cannot go to that extent, but we feel that more ought to be done to control the sale of these products, thereby providing more information to the consumer.

Mr. ROXBURGH: I wanted to direct some questions to Dr. Morrell, but whether or not this is the right time I do not know. I did, first of all, want to say to the ladies like some of the others have already done, that we do want to congratulate you on the brief you have presented. I agree it is difficult to put questions when you already are in agreement with a good number of the members of this committee along certain lines. You spoke of the licensing of dealers who sell these products; do you not feel, as the doctor has pointed out, that proper labelling would go a long way to relieve the situation in which we find ourselves? You must realize that in certain large cities it is very difficult for the wife, in view of the time at her disposal, to go long distances out of the way in order to obtain a certain type of fly spray and so on. It may be necessary for them to go a block out of their way in order to obtain this type of service. In view of this, do you not think that proper labelling, including proper precautions to take, and so on, would be very helpful in alleviating the situation.

Mrs. GREY: I think if the sale of pesticides were licensed to hardware outlets and pharmacists, for instance, it would prove to be very beneficial in the long run.

Mr. MITCHELL: You should not forget the drugstore.

Mr. ROXBURGH: He got in his oar there.

Mrs. GREY: There could be a variety of stores licensed in these shopping areas and suburban centres. I do not think it would necessitate having to go to the centre of town to buy these products. As I have said, it would prove very beneficial if we insisted on better labelling and the restriction of sales to certain outlets.

Mrs. PLUMPTRE: I agree that the really important thing is the education of the consumer.

The Department of Agriculture in the United States has just put out a new film on the safe use of pesticides. It is an excellent film and one which we should have in our possession. It should be shown on all our T.V. and radio stations across the country. It is a very interesting and delightful film. It is a film from which the farmer, the householder and the gardener could derive a great deal of satisfaction and information. We do not want to indicate that the farmers are responsible for all the dangers.

Mr. ROXBURGH: I hope not.

Mrs. PLUMPTRE: Education is very essential in these matters.

Mr. ENNS: Do you not think this approach could be made through educating our school children as part of their health course?

Mrs. PLUMPTRE: I agree with you. I think we should make a start in the schools. There is a lot of interest at the moment along these lines and not only should the girls be made acquainted with these dangers in their home economics classrooms but the boys as well should be made aware of the situation. After all, these young people leave school and later on get married and set up their own homes.

Mr. ROXBURGH: I was wondering what Dr. Morrell thinks about the business of labelling.

Dr. C. A. MORRELL (*Director, Food and Drug Directorate, Department of National Health and Welfare*): We are not concerned with the labelling of these as this is a matter for the Department of Agriculture.

Mr. ROXBURGH: All this comes under the Department of Agriculture?

Mr. MORRELL: Yes.

Mr. ROXBURGH: All insecticides?

Mr. MORRELL: Yes.

Mr. ROXBURGH: Then, what are your personal thoughts in this connection?

Mr. MORRELL: Well, let us talk about labelling in general. We consider the labelling of food and drugs a very important part of consumer education. There are certain mandatory regulations under the Food and Drug Act which requires that certain information must be put on the label, and we consider this a very important thing. It is something on which we have written very special regulations, particularly in the case of foods. We do have some warning requirements on drug labels. If you are asking me what importance labelling has, I think it is of great importance because this is one way of telling the consumer what she has bought and to be cautious.

Mr. ROXBURGH: In previous meetings we have been told that it might be detrimental to the sale of a product if it is noted that it is toxic, and possibly that is the reason why manufacturers are hiding information along that line.

I would like to draw your attention to carbon tetrachloride, which is a deadly killer and is used for the spot cleaning of clothes and so on.

I was home last week end and heard about this friend of mine. They did not know whether or not he was going to live. I have received a letter from his wife, which states:

Our problem stems from the inhalation of extremely dangerous fumes from spray and dusting materials, in this instance, carbon tetrachloride in a bin fumigant. We have used carbon tetrachloride in various forms for years and never knew till now that it would do other than asphyxiate us were we to be exposed too long in a closed space.

Then this lady goes on to point out that Dr. G. S. Cooper is an insecticide specialist and he said:

The newspapers are devoting unjustifiably glaring headlines to stories.

He claims there have been no known deaths in Canada due to insecticides where they have been used as directed, with which we possibly will agree. He referred to only three or four deaths in Canada each year from insecticide poisoning and these were from misuse.

I do not want to read the whole letter, but she goes on to talk about the labelling on this can. She says that the can should have been marked with a bright red skull and crossbones as big as the side of the can, but this can in question was marked in small print with two skull and crossbones on the back of the can, about the size of a dime, and the warning was printed in letters only slightly larger and darker than the method of employ. This is what it says on the can: "it may be fatal if inhaled or swallowed." There was no word of particular danger owing to the large percentage of one of the most potent and deadly inhalants known. She says, in her opinion, it should have screamed "danger", that it should have said "this fluid is extremely dangerous if not properly used; wear a mask; the ingredients will cause severe damage to the liver if fumes are inhaled". Then she goes on to say:

Granted my husband was careless, but what of the hundreds of people who use these things who can't read English.

As you recall, we did discuss this business of the language difficulties. As you know, we have a great number of people in Canada who just cannot read English. A very high percentage of our new people, who number between 50,000 and 60,000, come over here each year, and are unable to read either French or English.

Then, this woman goes on to say that at the time of writing her husband is still in danger but that the excessive and rapid deterioration of his liver cells has apparently been checked. I had forgotten about the fact that I lost a cousin with the same thing. He was killed on account of this. As I have said, the use of this material in spot cleaning and other household duties is very deadly. I am concerned with the deaths caused by these liver diseases across the country. Would it not be possible that if a certain amount of this was used over a period of time in the household this would be the end result.

The CHAIRMAN: Mr. Roxburgh, I think what you have pointed out has been one of the subjects the consumer association is dealing with at the present time. It is their wish that something further be done in connection with labelling, particularly in connection with those materials which are on the market and do not have any warning whatsoever.

Mrs. GREY: In addition, if these products were licensed to certain outlets having staff who were able to advise their buyers on the use of these products it would be of great assistance to everyone concerned. In this way it would be of great help to those who cannot read English. If a person comes in to a licensed outlet and is unable to speak or read English then, in my opinion, it would be a great advantage to have someone on the staff who could explain these dangers to them. The staff of these outlets could be informed by taking certain classes, as to the deadly effects of some of these products. This is why restrictive sales in addition to labelling would help in this particular instance.

Mr. COTE (*Longueuil*): You mention on page 4 that pesticide containers with labels in French should be mandatory for the French speaking areas of Canada. What do you mean by the French speaking areas of Canada? Are you in a position to know where the French speaking areas are?

Mrs. PLUMPTRE: Certainly one would know if selling to a French speaking dealer.

Mr. COTE (*Longueuil*): But in the French speaking areas there would be some English speaking people as well.

Mrs. GREY: Then in those cases you should have labels in both languages. As you know, no doubt, the tins bought in Ottawa are bilingually marked.

Mr. COTE (*Longueuil*): Do you not think it would be better if the directions and so on were bilingual in all cases.

Mrs. PLUMPTRE: We have no opposition to this. We just say that some consideration should be given to providing information to people who do not speak English or French. But, you have to be reasonable in your requests. As far as our needs are concerned, we would agree that it would be better if it was bilingual. Our main concern, as I have said so many times, is to make sure that the users of these products are informed of the dangers. That is the reason why we feel that certain dealers should have possession of these, so that they can pass the information on to the consumers.

Mr. COTE (*Longueuil*): Do you not think it would be better if all labels and directions were bilingual?

Mrs. PLUMPTRE: I agree entirely.

Mr. MITCHELL: I want to put in a plug for Dr. Morrell and his department. On page 3 it says:

The C.A.C. maintains that all persons producing and selling contaminated food should be prosecuted under the Food and Drugs Act, and that these prosecutions be given full publicity. We hope in this way to deter any prospective offenders.

Is it not true that this department already have that responsibility and are prosecuting under this particular act in the case of contaminated foods? In so far as prosecutions being given full publicity, I think you will recall the horse meat situation a short time ago, where there were several prosecutions. I do not know of anything that was given more or fuller publicity. I feel that your criticism here, in respect of the food and drug section, is not legitimate. I do not see how they could have done any more than they did. You mentioned inspectors, I believe; they are the people who brought these cases forward, as a result of which prosecutions took place. I feel, in spite of the fact that we all think that more safety checks could be used, the publicity that came from this was very full and was about as far as the department could go under their budget.

Mrs. PLUMPTRE: I agree in some respects. I would like to refer you to our C.A.C. bulletin of last January, wherein you will see a paragraph in respect of the number of inspections and the number of cases where the food and drug directorate had found pesticide residues in food. Until that time there had been no prosecutions. We asked why there had not been any prosecutions, if these things were coming on the market. The food and drug directorate had found residues in these products and they were not prosecuted. We raised this question, and why should we be criticized for raising it when people are putting these things on the market and are not being prosecuted? Since then, however, there have been some prosecutions. They have not resulted in large fines. We are not out to persecute these people but we feel that if a farmer puts butter on the market which contains dieldrin he should be prosecuted. Do you not agree?

Mr. MITCHELL: Up to the point where the quantity of the residue tolerance in the food has proved to be dangerous.

Mrs. PLUMPTRE: Under the Food and Drug Act you are not allowed any dieldrin in butter, so if a person puts butter on the market which contains dieldrin why should he not be prosecuted?

Mr. MITCHELL: Has the tolerance been proven?

Mrs. PLUMPTRE: Of course it has. It has been found by the food and drug people. We asked why these people were not being prosecuted and we were criticized for asking. All we are trying to do is protect our consumers. But, as I said, since then there have been some prosecutions. We feel there is a need for more inspectors and more analysts. It is necessary to have inspection plus analysts to make these prosecutions stick. As I said before, if it is found that people are putting foods which contain residues on the market they should be prosecuted. It is not our wish to persecute them but if you do not prosecute them they will keep on doing it.

Mr. MITCHELL: It still comes back to the same question, what is the quantity of the pesticide or insecticide ingredients in edibles that would cause this?

Mrs. PLUMPTRE: This is set down in the food and drug regulations. They have regulations which permit a certain amount of residues in some foods. In connection with the one I mentioned, namely dieldrin, there is no tolerance

allowed at all; you cannot have any residue of dieldrin in dairy products going on the market. This is the law.

Mr. MITCHELL: Do you not think that there is an intake of poisonous gases or ingredients every day into our human system?

Mrs. PLUMPTRE: Oh, certainly we do. But, as a result of the research that has been conducted the regulation is that you must sell food which is safe for consumption. This is the way the act reads. In the case of dieldrin, it is the law that you must not sell any dairy product which contains it.

Mr. WHELAN: Does the same law obtain in so far as margarine is concerned?

Mrs. PLUMPTRE: I expect so. It says: "any food". This is the type of thing we are studying. Regulations are available which pertain to the amount of tolerance that is safe.

Mr. BALDWIN: Could we have a comment from Dr. Morrell in that connection?

Mr. MITCHELL: Yes, I was going to ask Dr. Morrell, as well, to say a few words on this subject.

Mr. MORRELL: It is true that we have tolerances established in the regulations under the Food and Drug Act for certain pesticides in certain food groups. There is an upper limit beyond which the residue cannot go and be sold legally.

I would like to point out, however, there are several ways of enforcing these regulations in addition to prosecuting them. Up until this year, 1963, we have employed other means. For example, if we find food and milk which contains a pesticide residue that is higher than the permitted tolerance, or if there is no tolerance and we find some pesticide residue we have seized the food and ordered its destruction. Now, this is a penalty which often is more effective than prosecuting.

I think in some of the cases of prosecution in the west there was a \$5 fine levied. This is not a severe penalty. But, if a person lost \$100 or \$1,000 or more worth of his crop we felt that would be a more adequate penalty, and we would penalize him to that extent. As well, this would remove from the public market the product that was contaminated. So, we have used this means. Now then, if you find a pesticide residue that is highly above the tolerance, which could be due to a number of things, ignorance or, perhaps, a freak of nature, it is not always necessary to take a person to court or to penalize him if you are able to talk to him and warn him about using the particular product in question properly, and advise him of the dangers involved in the misuse of it. This, we have done as well.

Moreover, if you pick up a product at the market, lettuce, vegetables, fruit and so on, one is not always able to find the farmer who grew it, as a result of which you are not always able to locate the culprit. You can take that product off the shelves and out of the store but the store man himself has had nothing to do with it; he knows nothing about the past history of it. As far as we are concerned, the important thing is to get it off the market, and this we have done.

In the case of the dairy products in the west about which you have been speaking we had warned the farmers through the provincial departments of agriculture, through the national dairy council of Canada and so on about the residue of dieldrin they were finding in milk and cream prior to last year when we found it in some stores which handled butter. But, we knew that the creamery man himself, that is, the man who made the butter, was not really the culprit. He was not responsible, directly at least, for the pesticide residue. We had to send out inspectors to wait on the platforms in order to get the cream as it came in. They took samples of it and identified the producer of the cream.

They analyzed this cream and, as a result, were able to trace it down. It is not always popular to prosecute the poor farmer who may or may not be responsible for the pesticide residue in his products because his neighbours or other people may be partially responsible for it. We felt it was necessary at this time to do just what we did, and so we did it.

In summing up, as I said, there are various ways of enforcing the regulations and these methods have been used many times.

Mr. BALDWIN: Could I enlarge on that point and ask Dr. Morrell if in these prosecutions it is not necessary under your act to establish the offence was committed knowingly.

Mr. MORRELL: No, it is not.

Mr. BALDWIN: In other words, there could be a case where a farmer and/or dealer to whom the farmer disposes of his products had not been aware that the tolerances in question had been exceeded, and they still could be successfully prosecuted.

Mr. MORRELL: I am sure he could. But, there is an element of unfairness about it which makes us hesitant in some cases.

Mr. BALDWIN: That is what I wanted to bring out.

Mr. WHELAN: Is it not true that sometimes these announcements are not really authentic and, as a result, do great damage to the product in question. I am thinking of the Great Lakes fish and the large decrease in the price of fish in that situation.

Mr. MORRELL: There was a cranberry instance two or three years ago, as a result of which sales dropped by 70 per cent in the United States. At that time of the year it was due to the misuse of a pesticide. In this case again, we did not have prosecutions in Canada, although we found 60,000 pounds of cranberries in one of the provinces of Canada which had residues, and these were destroyed. I do not think anyone heard about it.

Mr. WHELAN: But, according to my information, there was nothing really wrong in connection with the fish in the Great Lakes. Is it not so that 99 per cent of the varieties of fish in the Great Lakes have nothing wrong with them?

Mr. MORRELL: I can tell you what I read, that seven deaths occurred in the United States from botulism, type E because of the consumption of smoked white fish. That points to some danger there.

Mr. WHELAN: That could be due mainly to the way the fish have been handled.

Mr. MORRELL: It may go farther than that; there may be a type E organism in the mud at the bottom of the lake upon which the fish feed and get contaminated.

Mr. GELBER: I would deem it a great pleasure to ask Mrs. Plumtre this question. Is not one of the important controls in so far as households are concerned, to have an informed vendor? Households are buying more and more in cash and carry chain stores, as you know, as a result of which the purchaser pays for his purchase at the cashier's desk. As you know, there is always a great rush in these centres, and I was wondering if your association has given any thought to the question of who should be allowed to handle these products which are labelled dangerous, and whether cash-and-carry stores, where there is no informed vendor, should be allowed to handle the product and participate in the sale of same.

Mrs. PLUMPTRE: No, we do not think they should be available for sale in supermarkets and cash-and-carry stores; we feel they should be handled through hardware stores and, perhaps, pharmacies.

Mr. WHELAN: Thank you.

Mrs. PLUMPTRE: And, possibly, agricultural outlets.

The CHAIRMAN: Are there any further questions, gentlemen.

If there are no further questions I would like to thank Mrs. Plumptre and Mrs. Grey for coming before this committee and giving us their information.

Before we adjourn the meeting I would like, first of all, to mention that our next meeting will not be on Thursday but on Friday, and on that date we will have Professor Brown from the University of Western Ontario in the morning and, in the afternoon, we will have Mr. D. R. Robertson the provincial entomologist from the province of Manitoba. I do not know if there is another committee meeting that morning but I am hoping that these two busy gentlemen will be confronted with a full complement of members on this occasion. As I said, this will be on Friday rather than on Thursday. We will meet at 9.15 because the house sits at 11 o'clock. We also will sit at 2 o'clock in the afternoon to hear Mr. Robertson.

We need a motion for this committee to call Professor Brown and Dr. Coon, the toxicologist from the United States to appear on November 8 and 19 respectively, so that the committee pay their reasonable travelling and living expenses, and that a per diem allowance be paid to them.

Mr. ASSELIN (*Richmond-Wolfe*): I so move.

The CHAIRMAN: It has been moved by Mr. Asselin and seconded by Mr. Mitchell. All those in agreement.

Agreed to.

The CHAIRMAN: If there is no further discussion the meeting will adjourn until Friday.

HOUSE OF COMMONS

First Session—Twenty-sixth Parliament

1963

SPECIAL COMMITTEE

ON

FOOD AND DRUGS

Chairman: Mr. HARRY HARLEY

MINUTES OF PROCEEDINGS AND EVIDENCE

No. 10

FRIDAY, NOVEMBER 8, 1963

WITNESSES:

Dr. A. W. A. Brown, Professor and Head of Department of Zoology, University of Western Ontario, London (Ont.); Mr. D. R. Robertson, Provincial Entomologist, Department of Agriculture and Conservation, Winnipeg (Manitoba).

ROGER DUHAMEL, F.R.S.C.
QUEEN'S PRINTER AND CONTROLLER OF STATIONERY
OTTAWA, 1963

SPECIAL COMMITTEE ON FOOD AND DRUGS

Chairman: Mr. Harry Harley

Vice-Chairman: Mr. Rodger Mitchell

and Messrs.

Armstrong	Fairweather	Orlikow
Asselin (<i>Richmond-</i>	Gauthier	Otto
<i>Wolfe</i>)	Gelber	Pennell
Baldwin	Howe (<i>Hamilton South</i>)	Roxburgh
Cashin	Jorgenson	Rynard
Casselman (Mrs.)	Macaluso	Whelan
Côté (<i>Longueuil</i>)	Marcoux	Willoughby.—24.
Enns	Nesbitt	

(Quorum 10)

Gabrielle Savard,
Clerk of the Committee.

Note: Mr. Jorgenson replaced Mr. Valade prior to the tenth meeting.

ORDER OF REFERENCE

WEDNESDAY, November 6, 1963.

Ordered,—That the name of Mr. Jorgenson be substituted for that of Mr. Valade on the Special Committee on Food and Drugs.

Attest.

LEON-J. RAYMOND,
The Clerk of the House.

MINUTES OF PROCEEDINGS

FRIDAY, November 8, 1963.

(10)

The Special Committee on Food and Drugs met at 9.45 a.m. this day, the Chairman, Mr. Harry C. Harley, presiding.

Members present: Mrs. Casselman and Messrs. Armstrong, Asselin (*Richmond-Wolfe*), Cashin, Côté (*Longueuil*), Enns, Gelber, Harley, Jorgenson, Macaluso, Orlikow, Roxburgh, Willoughby. (13)

In attendance: Dr. A. W. A. Brown, Professor and Head of the Department of Zoology, The University of Western Ontario, London (Ont.).

The Chairman observed the presence of a quorum and invited Professor Brown to address the Committee.

Dr. Brown made a general statement on pesticide compounds and on their beneficial value with regard to humans. He was questioned thereon.

Thereafter he spoke of the problems created on wildlife by the use of pesticides, and answered questions dealing more particularly with the research work done in the field of pesticides and insecticides.

The last part of Professor Brown's statement dealt with the development of resistance to different pesticides, and he answered questions thereon.

At the conclusion of the questioning, the Chairman, on behalf of the Committee, thanked the witness for his knowledgeable presentation.

In view of the sitting of the House next Tuesday morning, November 12th, the Committee agreed unanimously not to sit on that day.

At 11.00 a.m. the Committee adjourned to 2.00 p.m.

AFTERNOON SITTING

(11)

The Committee reconvened at 2.50 p.m. The Chairman, Mr. Harry C. Harley, presided.

Members present: Mrs. Casselman and Messrs. Armstrong, Baldwin, Côté (*Longueuil*), Enns, Harley, Jorgenson, Orlikow, Roxburgh, Whelan, and Willoughby. (11).

In attendance: Mr. D. R. Robertson, Provincial Entomologist of Manitoba, Department of Agriculture and Conservation, Winnipeg (Man.).

The Chairman welcomed Mr. Robertson on behalf of the Committee.

The witness read a statement outlining the legislation which the Province of Manitoba introduced with regard to distribution and use of agricultural insecticides, and the insecticide residue testing program being conducted on agricultural products in that province.

He answered questions about the system of licensing sales outlets and of qualifying dealers.

Mr. Robertson was also questioned on the ban imposed by Manitoba on the sale of dieldrin and aldrin for use on certain crops, and on the control of pesticides in his province.

On motion of Mr. Baldwin, seconded by Mr. Jorgenson,

Resolved,—That The Pesticides Control Act of Manitoba, assented to on May 6, 1963, and the Regulations under this Act be printed as an Appendix to this day's proceedings. (*See Appendix hereto*)

On behalf of the Committee, the Chairman thanked the witness, and at 3.25 p.m. the Committee adjourned until 9.30 a.m. Thursday, November 14th.

Gabrielle Savard,
Clerk of the Committee.

EVIDENCE

FRIDAY, November 8, 1963.

The CHAIRMAN: We will now come to order. We have a quorum present, and as our witness this morning we have Professor Brown, head of the zoology department of the University of Western Ontario. Dr. Brown kindly forwarded some reprints of articles that he has written in the recent past, and we have all probably had a chance to look at them. We will ask Dr. Brown if he would like to make any opening statement.

Dr. A. W. A. BROWN (*Professor and Head, Department of Zoology, University of Western Ontario*): Mr. Chairman, I became interested in insecticides after the war and have been engaged in Canada in the development of fairly large-scale control activities with insecticides against mosquitoes and black flies in the north, and in the beginnings of the spruce budworm campaign. Subsequently I have worked with the World Health Organization in various parts of the world in disease control activities using insecticides to control the insects which carry disease.

At the end of the war it seemed at last that we had what might be called true insecticides; that is compounds which killed insects but not man and animals. Before the war we had general poisons such as the arsenicals, the fluorine compounds and hydrogen cyanide, as well as nicotine—all general poisons. However, after the war we had the synthetic organic insecticides of which D.D.T. is the best and prime example. It has been calculated that in the years between its very first appearance in 1942 in Europe and the year 1952, already D.D.T. had saved at least 5 million lives and had prevented at least 100 million illnesses. Indeed, the lack of practical toxicity in man of D.D.T. is truly remarkable.

An article in the British Medical Journal of 1963 has stated that there has still to be proven a case of a single fatality owing to D.D.T. alone. In fatal accidents, most of which concerned children, the solvent which carried the D.D.T. alone was sufficient to have caused the fatal accident. At the present moment D.D.T. is being applied to the dwellings of 500 million people, which is a fantastically large proportion of humanity. In the global malaria eradication campaign, one-third of which has already been completed, the success against a disease which causes two and a half million deaths a year in the world is primarily owing to the cheapness of an attack with D.D.T.,—an insecticide, drug or whatever you want to call it. Indeed, among the 130,000 spray men who are applying it, and under close medical supervision, because WHO is in this, there have been no symptoms of poisoning with D.D.T.

Then the other synthetic insecticides to appear were dieldrin, aldrin, chlordane, heptachlor, endrin and toxaphene, a family of compounds which may be generically called the cyclodiene insecticides. These are peculiarly fitted to kill insects which are normally hard to kill, such things as grasshoppers and locusts, wireworms and a whole variety of beetles. Then, subsequent to that, of course, have appeared what are known as the organophosphorus compounds, of which the first to be practically used was parathion. When the word "deadly" is applied to insecticides, this is the modern insecticide to which the appellation applies correctly, but the implication of course is the opposite as well. Parathion is used by people who are, we trust, in full knowledge of

its danger; just like using cyanide in the old days. But now we have a tremendous range of organophosphorus insecticides—scores of them—and at least six of them are less toxic and some of them tend to be twenty times less toxic than aspirin itself. Indeed, one of them, malathion, has been used at the rate of twelve sprays per year to eradicate the Mediterranean fruit fly in Florida successfully without a single bird corpse having been found.

Thus we have now an arsenal of true insecticides, the key to whose development has been primarily that of maximum insecticidal efficacy and minimum human and higher-animal hazard. With these, as we know well, the situation in agriculture has been transformed. It is very difficult to set precise figures on this, but perhaps it is sufficient to say that with D.D.T. alone the entire crop of corn and of potatoes on this continent was increased by 60 per cent.

Now, of course, the question of residues and hazards in food to human consumers presents itself for consideration. This is a very interesting situation because frankly neither in the United States, in the United Kingdom nor in Canada have there been any cases of symptoms of poisoning of people who have consumed foods for sale by the regular outlets under present government regulations.

It is a fact that much of the so-called pesticide controversy has been a controversy because there are indeed no cases or instances to provide the quantitative levels on which you can come to some general practical conclusion. Thus indeed it becomes a controversy because the data simply is not there. Only two cases have been reported of over-application to a crop which has been eaten, and both of these were local; they did not come through the main outlets and they were both in the United States. I believe that one concerns nicotine on a crop called mustard greens—and the other of toxaphene on chard.

We all know by now that most of us at our age contain a certain amount of D.D.T. in our body-fat. The average American has been stated to carry about five parts per million according to the U.S. public health service. The figure quoted in the report on pesticides of the United States President's advisory committee is 12 parts per million. The average figure obtained in the United Kingdom is 2 parts per million. What does this mean? Presumably the only way you can find out what this means is to find people who have in their body fat very much more. We can go, for example, to those who apply D.D.T., to the applicators, and the average for them runs at about between 10 and 20 parts per million in their body fat. We can find extremes in those people who spend their working days formulating insecticides, and there the amount of D.D.T. in their body fat is of the order of 200 with an outside case of 650 parts per million. They were in normal health.

Experimentally therefore obviously the thing to do would be to feed humans with contaminations of D.D.T. which are of the order of 200 times that which they normally encounter in the American diet, and to see what happens to them. Indeed this was done in the state penitentiary at Tallahassee, Florida, by toxicologists of the U.S. public health service, and they found that over a period of 18 months of taking such diets those men remained in perfect health. They accumulated up to about 250 to 300 parts per million of D.D.T. in their body fat after about 10 months, and then, for the remainder of the period, it levelled off because the body was excreting and detoxifying enough to keep it at a stable level. There are other points on this, but perhaps I should not burden you at the present time unless you wish to ask about it.

I suppose that another way of finding out whether pesticides as used are bad for the population is to go to particular areas of our continent where they use large amounts of them, as, for example, the apple-growing regions of Oregon

and Washington, places like Wenatchee and Yakima where they use a great amount of organophosphorus compounds, or places like Cleveland, Mississippi in the middle of the corn and rice growing areas of the south where they use a great amount of D.D.T. and of the cyclodiene insecticides which we mentioned, and to see whether the public-health statistics show any significant difference from anywhere else where they do not use insecticides. This was done by the U.S. Public Health Service in both places over a period of five years about five years ago, and they were unable to find any item of public-health statistics which showed that there was any significant difference in any disease.

With respect to the cyclodiene insecticides, of which dieldrin is an example, also aldrin and so on, they have been valuable for particular things, as for example, to control grasshopper outbreaks cheaply. These compounds have given no indication of any symptomatic poisoning of humans through the contamination of food, but naturally our government has set regulations, which they arrived at more or less by educated guess and which are laid down and corrected with such an incredible margin of safety that in the case of dieldrin on milk and on products fed to dairy cattle the tolerance limit for these compounds has been set at zero. Really, I suppose any person will tell you that it would be impossible to get in fact a zero tolerance when cattle are raised in an area where grasshoppers are controlled with these compounds. The fact that these compounds on the prairies now have had to be banned by a single province is simply in order to meet a standard which has been set by our own very conservative federal government; that is the essential reason why. Of course, in the case of cyclodiene compounds, I cannot state the same promising and reassuring things that I have been able to state with respect to D.D.T. In fact, really not enough work has been done on chronic poisoning with cyclodiene insecticides of which dieldrin, aldrin, heptachlor, etc. are examples, but it is being done and the reports are coming down shortly to the body which I presume is the best to report to, that is the body of the United Nations which is WHO. From these, levels will be established for what is called the acceptable daily intake; that is the maximum amount of that compound which you may take in per day and with which you will be all right with a margin of safety as far as international expertise can deduce. These figures will then be applied to the various items of diet forming particular diets of different countries, and thus tolerance limits can be properly set. Indeed, the U.S. President's advisory committee also singled out this group of compounds (the cyclodiene insecticides) as those for which the tolerance limits should be examined.

Mr. Chairman, this is just an introductory statement. As a private citizen and as one who has studied insecticides for many years, and written text books on them, it has been my impression that government regulation of these insecticides as it stands has been remarkably satisfactory and extremely conservative. There should be constant examination, as against the possibility of revision, compound by compound—not in generality, but compound by compound because that is what we are dealing with. This should be made easy for government officers. One way of making things easy, of course, is to provide the sinews of operating, which is in fact money, in order that the contamination levels of food stuffs can be constantly and quantitatively measured.

En passant I should say that in the United States this examination has shown that the percentage of crops coming to market over tolerance limits is extremely low; and that, by and large, farmers have themselves ensured that on the average they are about 60 per cent below tolerance limits.

Further, I should say it is curious that I have heard the criticism that reference to United Nations organizations such as WHO and FAO simply refers us to the same old people; in other words, the people we know in our own

government. Might I turn this around the other way and say that Canadians in government in this field are so highly regarded that they form a very high proportion of the expertise in the international agencies. I think that is a guarantee that our country has been and is being well looked after on the matter of the hazards of pesticides to humans.

That is the only statement I would like to make, Mr. Chairman, with regard to humans. Of course, wildlife is another thing but perhaps that could be taken up later.

The CHAIRMAN: First of all I would like to thank Professor Brown for his very clearcut, very concise and very knowledgeable statement.

Before I ask members of the committee if they have any questions for Professor Brown I would like to say that Professor Brown will make a short statement later on dealing particularly with wildlife and with resistance to pesticides, and the development of resistance. If it is the wish of the committee, we will open the meeting for questions now.

Mr. ROXBURGH: As a fruit grower and a fruit sprayer I think I can go along with your general statements, but I have been reading one of your articles, which certainly is very interesting to me, telling us of the enormous number of insects that have become resistant. I had realized there were some, but I did not realize the number.

You mentioned in your talk just now about feeding these compounds to prisoners, and that when they reached a certain level the body threw them off. What is your opinion on human beings becoming resistant in the same way as insects? We are all animal life. Why would not the human beings automatically do the same thing over a period of years? What is your thought on that?

Mr. BROWN: Mr. Roxburgh, this is a question which involves the fundamentals of biology, and particularly genetics. Insects develop resistance to specific compounds by a process of selection, meaning the killing of certain of them which were genetically or constitutionally the most susceptible. Those that were genetically the more resistant survived to breed and thus, generation by generation passed on that characteristic, to develop the resistant strains. I am sure Mr. Roxburgh would not like humans to develop their resistance in this way.

Mr. ROXBURGH: It might be a good thing.

Mr. BROWN: However, since you raise this most interesting point, resistance to D.D.T. has been induced in mice by selection, in experiments performed in our own country at Macdonald College. Moreover, down in the cotton-growing areas of Mississippi there are two species of frog and one species of fish which have acquired or developed resistance to the chlorinated hydrocarbons which are applied so heavily there.

Mr. ROXBURGH: There is one other question I would like to ask. We have talked about D.D.T. and about phosphates. What about tetrachlorides such as those which we know have caused death and severe sickness by an overdose of their fumes? As a matter of fact I lost a cousin in that way; he had been treating grain. Just recently in my own area in Simcoe another farmer was careless and is now in very grave condition because of the breaking down of the liver. We use the same material that is used in the household all the time for cleaning spots off clothes and so on. People have died from liver diseases or liver complaints. What would your opinion be about the use of these compounds in the home where one gets a little whiff now and again? What is your idea about tetrachloride being used in that way? Do you think it is indirectly responsible for some of the deaths and some of the sicknesses over the years? I know that is a rather general question.

Do you consider any of these substances will cause death in those circumstances, even taken in small quantities? Would they have any effect on the liver?

The CHAIRMAN: May I just clarify for Mr. Brown? Mr. Roxburgh is referring specifically in this case to carbon tetrachloride, and while it does not refer specifically to pesticides and insecticides, he is asking whether these compounds, taken over a long period of time, may be producing diseases of a chronic nature.

Mr. ROXBURGH: Yes, that is it.

Mr. BROWN: We always look for experimental evidence to answer questions. This question of liver damage is a very interesting one. I take it that you might like to extrapolate from carbon tetrachloride to other chlorinated hydrocarbons such as D.D.T., which are used frequently. D.D.T. itself when fed to rats at moderately high levels has caused slight changes in a small proportion of the cells of the liver, changes which are reversible when the animal is removed from the D.D.T.

The fact that formulators on Tallahassee prisoners had such high residues in their body fat and yet were healthy has led a certain critic to say that therefore they must have had liver damage. This is a point which you cannot check on humans, but you can check it on animals which are closer to humans than rats, namely rhesus monkeys. It has been found when they have been fed very high levels of D.D.T., sufficient to attain 300 parts per million in their body fat, not only did they fail to show any symptoms whatever, but also when post mortems were conducted and their livers examined they showed no cell changes analogous to those which had been seen in rats. These findings were published this year.

Would that answer your question?

Mr. ROXBURGH: Yes, thank you.

The CHAIRMAN: Are there any questions, gentlemen?

Mr. WILLOUGHBY: It is certainly encouraging to hear such an optimistic report after some of the reports we have heard in this committee which almost made one feel it was dangerous to use all these things. However, I am glad to hear those reports are exaggerated to say the least.

You mentioned that in the use of D.D.T. the toxic substance was not in the D.D.T. itself but in the solvent. Is there any other solvent that could be less toxic?

Mr. BROWN: To obtain a concentration of D.D.T. you must use the aromatic oils. It might be possible to dissolve D.D.T. in nujol, which is the non-toxic oil, but it is scarcely soluble in it so you really could not obtain a formulation which would be of any use practically; and of course it would be tremendously expensive. Your excellent point, Mr. Willoughby, I cannot further answer.

The CHAIRMAN: Are there any other questions, gentlemen?

Professor Brown, perhaps you would care to go on with your statement on wildlife. There has been a great deal of talk in this committee on this subject.

Mr. BROWN: Mr. Chairman, the problem here has arisen because the cheapness and apparent safety of certain insecticides has now made it possible to tackle large-scale problems, particularly in forest protection, in order to combat destructive forest insects. Here we find that animals and organisms which cannot escape—nor indeed do they have any say in deciding whether there should be this operation—have become the target and their safety is at stake. A great deal of work was done on the toxicity of D.D.T. to wildlife between the years 1948 and 1950, and from that work it appeared that you could state that area sprays with D.D.T. were perfectly safe to mammals even up to doses of 5 pounds per acre of D.D.T., which is away above what is ever used.

With respect to birds the dangerous dosage was not reached until you reached 2 pounds per acre; and with respect to fish the dangerous dosage was not reached until you reached 0.5 pound per acre. These original decisions were based partly on what was felt to be all right for wildlife, what was considered to be insignificant mortality—which is a variable thing—and in ignorance of a secondary effect over and above the immediate effect. The secondary effect, of course, is the accumulation of D.D.T. through the food chain, with which you are familiar. We found horrible examples arising of what has been described as needless havoc, for example, in Dutch elm disease control or the attempt to delay the spread of Dutch elm disease by the use of D.D.T., which is used in this case not at 1 to 2 pounds per acre but at 1 to 2 pounds per tree, a fantastically high dosage. This resulted, in towns where elms were almost the exclusive shade tree, in the destruction of all the insect food for birds, and leaving only resistant bird foods such as earthworms. Earthworms, of course, were so contaminated with D.D.T. from the soil that a certain number—generally about a hundred—were sufficient to kill a robin. So there were deaths of birds, particularly robins, in these towns in the mid-western States where elms were almost the exclusive shade tree. This of course is offensive and is hard on the robins. If it can be avoided, naturally it should be; and it can be avoided by the substitution of D.D.T. by something which is almost as good against the elm bark beetle, which is the target, and which is not so persistent and is much more non-toxic to birds. That is methoxychlor. The substitution of methoxychlor, which was started about last year in Michigan, has now spread to Canada. The only trouble is that it costs more.

Other examples in Canada concern woodcock in New Brunswick, where one wildlife worker has detected a loss in reproductive success of these birds in D.D.T. sprayed areas, and he associates it with the experiments done at Laurel, Maryland by the U.S. Wildlife Service on pheasant and quail which have shown a reduction in reproductive success by feeding D.D.T. and dieldrin. He considers this degree of reproductive success in the woodcock is due to the D.D.T. When their body fat is examined it is found that the main chlorinated hydrocarbon in that body fat is not D.D.T. but heptachlor, a cyclodiene insecticide which is not used in New Brunswick at all—except perhaps on one farm—but which is freely used, along with analogous cyclodiene compounds, where woodcock go in the winter, namely the cotton-growing states bordering the gulf of Mexico. I will not say more but perhaps you will draw your own conclusions looking into this matter. The fish and wildlife service, were curiously enough, unable to confirm that there is any loss of reproductive success in woodcock, and so the problem becomes rather difficult. Another example concerns the bald eagle. One fact is sure: the nests which the eagles make now seldom have eggs, and those eggs which are produced seldom hatch. When those eggs are examined chemically they will be found to have a high amount of D.D.T. in them. Therefore a case should be made out, with regard to a bird such as the bald eagle which eats a great amount of fish before its gonads are mature, that it could have accumulated from the fish, which in turn have accumulated it from creeks draining agricultural areas, enough chlorinated hydrocarbon insecticides to cause either the non-lay or the non-hatch of such eggs. This is under active study by the U.S. fish and wildlife service, but they have been unable to reach any conclusions. They have also pointed out, in all fairness, that another of the reasons for the lack of reproductive success of the bald eagle is that suburbia has actually chivvied it out of most of its nesting sites.

It is clear that the widespread spraying of what might be called safe insecticides could have secondary effects which result not from one spraying but

mainly from repeated spraying over certain areas resulting in a gradual build-up of residue. Thus this is a continuing study. It is a question of obtaining information, of evaluating it, and then translating it into terms of practice.

There is no doubt that it is very much in the interest of wildlife as a whole and of humans who enjoy wildlife in the wilderness that there are often cases where forest protection should be undertaken with insecticides to prevent the wholesale destruction of the forest, its drying out and its later devastation by fire. Indeed, much of insect protection is really fire protection. Therefore, it is a question of balance. We could be committed one way and say "away with all these chemicals which get into the streams, rivers and estuaries"; but on the other hand we would at the same time be destroying the weapon to the hand of forest protection and indeed of conservation which insecticides provide. That is, it appears that in order to prevent cutting off our nose to spite our face we must obtain evaluation and balance. It is in my opinion a characteristic of this country that the setting up of the Interdepartmental Committee to deal with these matters, far from creating a monolithic conspiracy of government officers to protect each other, is in fact an honest attempt to come to agreement among themselves in an area where, of course, from their own interest one department is committed one way and another department the other, to come to a balanced and responsible decision for the benefit of the public.

I think probably it is just to say that in this respect technical colleagues are in a better position to come to a balanced decision on points such as these than the general public. This is not to say they must not always be conscious of the intangibles which can be put forward by the general public. For example, in many parts of Canada black flies are an infernal nuisance, particularly to fishermen. It is perfectly possible to abate the black fly nuisance. In 1948, for example, we destroyed nearly all the black flies in the South Saskatchewan river for a hundred miles downstream without killing a single fish, even those which were exposed under the spray, by a very careful manipulation of dosage of D.D.T. Indeed, this can be done and has been done in resort areas in New York state. You can exterminate black flies and the fish populations remain the same but, after several years, the fish you catch will have D.D.T. in their body fat to an amount in excess of the 7 parts per million tolerance limit, and even as high as 200 parts per million.

One would suggest, of course, that game fish, fish in the pan, are not ever a large part of human diet; but one could also suggest that this would become almost an aesthetic point. The general public would like to feel when they go to the wilderness that they are not catching nice fish in the pan which have anything so mundane, so trade-like, as D.D.T. So there are these intangibles which the experts must always be reminded about, and always are.

This matter of the effect on wildlife in a country in which the tourist trade is so important and on a continent where wilderness areas are constantly contracting, is thus worthy of great thought and imaginative sympathy. But in order to have the food for thought, one must have experimental data—and again experimental data cost money. It is my feeling that here again, if it were possible to undertake a considerable program of research on this matter in Canada, the results of which would come before the Interdepartmental Committee and thus would not become the property, shall we say, of any one department with an exclusive point of view one way or the other, it would be possible for a balanced picture to be obtained.

Finally, Mr. Chairman, I feel it is exceptionally important that the general public also be given a true picture on insecticides. As you know, in my opinion they have not been given it yet.

The CHAIRMAN: Thank you very much, Professor Brown.

Mr. ROXBURGH: You have talked about decrease in reproductive success. I wonder whether there has been any definite experiment carried on along this line through animals, and shall we say particularly our monkey friends as they are closest to the human race? If so, what are the results?

Mr. BROWN: You are not meaning birds, you know all about that. You are really referring to mammals?

Mr. ROXBURGH: Yes.

Mr. BROWN: It has only been done so far on rats because of course to do it you must have fairly rapidly breeding populations, and the cost of rhesus monkeys is almost prohibitive. With rats a significant decrease in the number of surviving young has been observed when the dietary level of D.D.T. reaches 50 parts per million. This is an extremely high dietary level. It is 100 times that in foods. In our experience of comparing large animals to smaller ones, so far it has turned out that large ones are far less susceptible than smaller ones. One would definitely say—in default, shall we say, of reproductive data from insecticide formulators, which I suppose could be obtained finally in sufficient quantities—that from what we know now we are reproducing at a sufficient rate anyway.

Mr. WILLOUGHBY: Mr. Chairman, it seems from what Professor Brown has said that he confirms the impression we have already had in this committee that we should think of a central agency to try to undertake these studies instead of having it spread among different departments—and that is no reflection on the departments undertaking it. Certainly the economic problem itself would indicate that we should have these agencies under one head. There is also the question of public education. How would Professor Brown suggest that we undertake to try and get over to the public the fact that these are not completely dangerous and yet we know they have to have some protective advice?

Mr. BROWN: Mr. Chairman, if that is a question which Mr. Willoughby asks me, what I imagine is the first thing to do is to give certain of the most important insecticides personalities. In other words, you should know roughly what the hazards are of each, and what they will do, and how valuable they are. You would introduce the public not to “insecticides”, which often in some cases have almost become a dirty word, but you would introduce them to D.D.T., you would introduce them to parathion, you would introduce them to arsenicals which are fortunately disappearing, and you would introduce them to a range of compounds, so that somehow not only the general public but also the user could get some idea of what kind of chemical he is using, why he has to use it, what contribution to the community he is making by using it, and what hazards to the community he is entailing by using it.

Mr. ENNS: This brings me to the point that was at the back of my mind on the question of research. In the previous hearings we have had a great deal of deploring of the lack of research facilities in this area. Many of the witnesses who have appeared before the committee have almost accused the government of not supplying sufficient funds and of the public not being knowledgeable enough to realize that this is so important. You are very optimistic and reassuring, and I am comforted by hearing you. However, would you support this plea for additional research facilities?

Mr. BROWN: Yes, of course, and indeed we should put Canadian research into the context of North American research, because for instance in wildlife so many of our species are migratory.

Mr. ENNS: Are you suggesting that this is not a companionable research, one country against the other?

Mr. BROWN: No, I was not implying anything of that nature, but certainly whatever is done in Canada has a great bearing on the United States, and

vice versa. For example, such things as ducks and geese. Here indeed there is an urgent need for the study of the effect of insecticide accumulations, particularly the chlorinated hydrocarbon accumulations on these rather long lived birds such as ducks and geese. Also there is indeed an urgent need for basic work on finding out what happens in the eggs with respect to chlorinated hydrocarbon residues, because it does appear there is a tendency for them to accumulate in the egg as it is developed in the mother bird, and these are points which at present are the missing links in our knowledge. We have knowledge of the deaths, and *a priori* knowledge of what might happen, but we need basic physiological data to fill the gap in understanding. For this I would think university research would be the answer.

Mr. ENNS: Is there any connection or relation with the overlapping of harmful effects of fallout and insecticides and can this in any way be married by saying we are facing the threat from these two sources? Which are we more concerned about and how can we fend off these two dangers? I know you can avoid it by not using it. Are they counteracting or interacting in their effects?

Mr. BROWN: The effects are different. The effect of fallout is one which may not show itself in this generation and may not show itself until succeeding generations. Then, as you know the dangerous effect of radioactive fallout is the genetic effect in changing the genes which go to make up the genetic constitutions of individuals or animals or plants. In the case of insecticides, this is not involved at all; there is no hidden delayed effect of that nature. So that when the one has been compared with the other as sources of equal menace, you are really confusing apples with oranges.

Mrs. CASSELMAN: Professor Brown, how do we compare generally with the other areas of the world in research, and can we fill in the missing links in some of this research?

Mr. BROWN: I will say yes to your second question, very much so. It is simply a matter of being well informed, and it is surprising how far you can get simply by diligent scholarship of what has been done in other parts of the world to date. It is fantastic how much has been done. When people say that very little research has been done, nine times out of ten it means that little research has been read by that person. On the other hand of course, our research should fit into a context which is given by personal or mail contact, professional contact between the Canadian and the American or the British or others. The researchers should be able to build up their fields between themselves, and as scientists they are encouraged to formulate their own concepts and take their own direction of investigations. And so an applied sub-science such as this gradually grows, and people at technical meetings can then exchange their information and come to their own conclusions. Does that answer your question?

Mrs. CASSELMAN: Yes. Would it not be economically wise for governments to work more towards communication in such expenditure of individual research that may be repetitive?

Mr. BROWN: Yes. One has always felt it is a crying shame that government scientists cannot attend meetings for lack of funds to go.

Mr. WILLOUGHBY: Is the WHO not coordinating research in different countries at the present time?

Mr. BROWN: To a certain extent, in a way, you can say yes. The main way in which you do coordinate of course is by putting out what is called Information Circulars, in which everything that you know to be coming up in different laboratories and in different states of completion is abstracted and sent to all members of the circle. At the same time consultants are sent to a variety of other countries.

Mr. WILLOUGHBY: Is there no central committee at the present time?

Mr. BROWN: Yes, there is an expert committee on insecticides of WHO which has periodic meetings, and in addition, as an offshoot of it, assembles seminars and conferences, as well as working groups, which in one way or another try to cover burning questions as they arise and demand attention.

Mr. CÔTÉ (*Longueuil*): Professor Brown, do you do any research for the government?

Mr. BROWN: Yes, I have grants for such research and also to develop particular lines which I consider to be scientifically worth while and which the government agency considers practically worth while supporting.

Mr. CÔTÉ (*Longueuil*): What department do you report to?

Mr. BROWN: The reports are made to the granting agency, to the National Research Council or to the Department of Agriculture or to the Defense Research Board of Canada depending on which project it is.

The CHAIRMAN: As the hour is getting short perhaps we can call on Professor Brown to say a few words about the development of resistance to pesticides.

Mr. BROWN: Well, Mr. Chairman, perhaps the first thing that I can say on our position in regard to insecticide-resistance is that we have already made the point that it is due to selection and not to habituation or post-adaptation. The second point we should make is that this resistance, when it comes, is not an over-all resistance to all insecticides. In other words, there is one group known as resistant to D.D.T., and this involves resistance to D.D.T. and to compounds related to it and not to others. There is another type of resistance which we now call cyclodiene-resistance or dieldrin-resistance, which is resistance developed to dieldrin, aldrin and that group, but not to D.D.T. Neither of them shows resistance to organophosphorus compounds—that in itself is a separate type of resistance and generally is slower in coming.

At the present time in Canada resistance has been developed in 17 species of insects and mites. In the world there are a little over 160 species showing resistant populations. The increase in the number of species going resistant is no longer increasing at the same rate as it has before. The increase is becoming less. It is not an avalanche, as has been described in a recent book, but it is more like a glacier. It comes at a rate allowing sufficient time to undertake alternative measures and to introduce substitute insecticides or new methods of control. The impression has been given in a movie I know of that resistance means the switch to ever more deadly insecticides. Nothing could be further from the truth. What cyclodiene-resistance is doing, and that is the most common resistance now, is to cause the switch from these compounds such as dieldrin and aldrin which are very persistent and about which Mr. Robertson will speak this afternoon, to compounds which have very little residue hazard at all because they decay very quickly, that is the organophosphorus compounds. Therefore, it is a rather curious thing that what resistance is doing is to accelerate the trend towards less persistent and more expensive insecticides. That is all I have to say on resistance.

Mr. ROXBURGH: Why this has come about is perhaps hard to understand. I do not say that my area, Norfolk county, is any different from others but we have good men there who help us out. We as growers do not continue with the use of one definite insecticide. We will put on a spray of D.D.T. and then we will follow it with phosphate and then we will follow it with lead arsenic if it is necessary, whatever the case may be. The same thing applies to fungicides, and so on. Have you any record, Professor Brown, of resistance to those insecticides in our area?

Mr. BROWN: You mean in Norfolk county? The only resistant species you have in orchards is the European red mite.

Mr. ROXBURGH: I should like to ask you the following question. What would be the effect of the rotation in the use of insecticides? For instance, one year we would use one compound, and then for another year or two we would use something else and before we return to the first insecticide there might be a lapse of two or three years. Is there any method of breaking down insect resistance in this way?

Mr. BROWN: Yes, your practice of rotation of the insecticides has been shown in Ohio orchards to delay the onset of resistance in red mites.

Mr. ROXBURGH: It does not control, it delays.

Mr. BROWN: Exactly.

The CHAIRMAN: Are there any other questions gentlemen?

If there are no other questions I would like to remind the committee that we are sitting this afternoon at two o'clock to hear the provincial entomologist from Manitoba, Mr. Robertson.

I would like to ask the agreement of the committee not to sit next Tuesday. The house is not sitting on Monday and it will start sitting at 11 o'clock on Tuesday. Because of this we have no one in particular lined up. If the committee agrees, we will not have a meeting next Tuesday.

On behalf of the committee I would like to thank Professor Brown for taking the day of his free time from the university to come down and speak to us. He has given us a very informative talk and I would like to express, on behalf of the committee our sincere thanks for his presentation this morning.

AFTERNOON SITTING

FRIDAY, November 8, 1963.

2:50 p.m.

The CHAIRMAN: Gentlemen, we have a quorum. This afternoon we are pleased to have with us the provincial entomologist from the province of Manitoba who fortunately happened to be in Ottawa on this occasion. We extended an invitation to the minister of agriculture of Manitoba. They were pleased to suggest that Mr. Robertson come before the committee today. So without any further ado I will ask Mr. Robertson to make a statement and then maybe he could answer any questions of the committee.

Mr. D. R. ROBERTSON (*Provincial Entomologist, Department of Agriculture and Conservation, Winnipeg*): Thank you Mr. Chairman and gentlemen. It is indeed a pleasure for me as a representative of the Manitoba department of agriculture and conservation to have the opportunity of appearing before this House of Commons special committee on food and drugs. It is my sincere desire and wish that I may be able to be of assistance to you in fulfilling the very important task you have to perform. I know you are interested in what has taken place in the province of Manitoba with regard to legislating the distribution and use of agricultural insecticides, and I will briefly outline to you the legislation which has been introduced and the insecticide residue testing program being conducted on agricultural products in our province.

On May 6 of this year the Manitoba legislature assented to Bill No. 51, an act to control and regulate the distribution and use of pesticides and called the pesticide control act. On May 28 of this year the Manitoba regulation No. 42 under the pesticide control act was filed setting forth that the new act would control and regulate the distribution and use of insecticides only. It set forth the licensing procedure for all persons selling insecticides in the province, established a \$10 licence fee for pesticide dealers, and set forth a procedure to be followed by licensed dealers in the sale of specific insecticides, namely aldrin, dieldrin,

heptachlor endrin and, D.D.T. The pesticide control act and regulation 42 controls the distribution and use of insecticides to be used by farmers on field crops or livestock. The act provides for the testing of field crops, livestock, livestock products for the presence of an insecticide residue, the destruction of contaminated products and penalties for violation of the act. The act also has provision for the power to ban or prohibit the use of an insecticide in Manitoba. Recently the Manitoba government introduced a regulation placing a ban on the insecticides aldrin and dieldrin for use on cereal crops, oil seed crops, pastureland, road allowances, drainage ditches, rights of way used for public purposes or for public utilities or wasteland.

Testing facilities for conducting insecticide residue tests by the province is a joint federal and provincial program. Tests are carried out in the laboratory of the food and drug directorate, Department of National Health and Welfare in Winnipeg. The food and drug directorate is providing the space, most of the technical equipment and technical assistance. The Manitoba department of agriculture and conservation is providing a graduate chemist and assistant to do the provincial testing work, and providing some of the equipment and all the chemicals that are used. Although an insecticide residue testing program was introduced into Manitoba about a year and a half ago, most of the first year was spent training personnel and developing analytical procedures, so that most of the tests conducted on agricultural products in our province have taken place over the past six months. The introduction into our province of the pesticide control act and insecticide residue testing program was done to protect the good reputation of our agricultural industry in Manitoba and the public health of all who might use our agricultural products through the safe use of insecticides.

The CHAIRMAN: Thank you very much, Mr. Robertson. Are there any questions that the committee would like to address to Mr. Robertson?

Mr. WILLOUGHBY: I would like to ask a couple of questions relative to the system they have in their province in licensing sales outlets. I would like to know how they go about training these people. I would like to ask further whether, in case the individual who receives the training is not available in the licensed premises at the time, someone else is allowed to sell these goods? Do you find this arrangement is a practical one?

Mr. ROBERTSON: This new act was introduced in June of this year; therefore we were not able to require qualification for the pesticide dealers' licences that were being issued. It is however our intention for 1964 to require that all persons obtaining a pesticide dealer's licence qualify for this licence. The exact procedure of this has not been completely finalized as yet. However we anticipate that it will involve two aspects: firstly, we will require all persons wishing to obtain a pesticide dealer's licence in 1964 to attend a pesticide dealer's course, and also they will have to pass a qualification examination when making application for their new licence. This is the procedure we wish to follow at the present time, to try and assist and educate the dealers who will be handling or selling insecticides in the province of Manitoba.

Mr. WILLOUGHBY: There is only one individual in any business who is allowed to dispense that chemical. Is that correct?

Mr. ROBERTSON: The name of the company involved may be placed on the licence which is applied for, but some one individual person will be responsible for the sale of goods from a sales outlet. This does not necessarily mean that he has to actually handle each individual sale, but he would be responsible for the sale of the insecticide.

Mr. WILLOUGHBY: I do not quite understand the object of it unless it is the question of educating the people. If this man is trained on the toxicity of the

substance that is being sold he therefore has to instruct the people he is selling to. That was my understanding of the problem.

Mr. ROBERTSON: I would say that the person selling an insecticide may instruct the person who purchases. However, we do hope that by educating these dealers they will have a better understanding of the products they are selling. In this way they are going to help the whole situation.

Mr. ENNS: Mr. Robertson, I am interested in this area of licensing and restriction of outlets. Is there any limit put on the classifications of retail outlet in regard to licensing? Is it restricted to hardware stores, or can anyone apply for this?

Mr. ROBERTSON: Anyone may apply.

Mr. ENNS: Even Safeway for example? Can a big shopping center take out a licence and would it be considered a licensed outlet if they paid their fees, even though one could just take the product off the shelf?

Mr. ROBERTSON: This could be correct but it is not a good example because we are speaking of use by farmers on their fields and for livestock.

Mr. ENNS: Not for domestic use?

Mr. ROBERTSON: No.

Mr. BALDWIN: To what extent is there similarity or divergence between your legislation and that of the federal government Pest Controls Act? You are, of course, aware of the provisions of the federal legislation which is administered by the federal Department of Agriculture?

Mr. ROBERTSON: Yes. The federal legislation covers the licensing of the chemicals to be sold in Canada.

Mr. BALDWIN: Yours is a licensing of persons?

Mr. ROBERTSON: Ours is the licensing of the person who sells insecticides.

Mr. BALDWIN: Without regard to the character and quality of the chemicals themselves?

Mr. ROBERTSON: Yes.

Mr. JORGENSEN: Have there been any prosecutions for infractions of your act since it came into force?

Mr. ROBERTSON: We have not had any prosecutions up until the present time.

Mr. BALDWIN: You set the permissible residue levels in food products, such as butter and things like that?

Mr. ROBERTSON: No, this is set by the federal department.

Mr. JORGENSEN: Do you simply follow the regulations as set out by the federal department?

Mr. ROBERTSON: This is correct.

Mr. ENNS: Would this legislation be a result of experience with dieldrin, or is there growing concern about misuse of sprays and insecticides? Why was the act deemed to be necessary?

May I make a further qualifying comment? In view of this morning's session, when we heard excellent information from Professor Brown, who thought governments were conservative in their outlook towards the dangers and more cautious than they needed to be—perhaps I am not phrasing this correctly—why are governments now taking a further stand? It is my own province and I do not want to sound too critical. Was there any particular crisis which motivated this type of legislation?

Mr. ROBERTSON: The problem was dieldrin which, as many of you know, has been used extensively for the control of grasshoppers in the province of

Manitoba; and it is also used for other purposes. We have encountered—and I am sure this has been related to you by the federal food and drug authorities—residues of this insecticide in livestock products. We feel the use of this compound in our province and under our practices of agriculture cannot be carried out without resulting in a residue in livestock products. At the present time there is a zero tolerance of this insecticide appearing in dairy products and also in meat. Therefore we do not feel that we can conform to these strict regulations with the use of this product in the province.

Mr. ENNS: Is there any way of controlling the import and use of the insecticide even though it may not be distributed within the province? Is there any way of controlling someone bringing the product from Saskatchewan or Ontario for example? Is any such control intended in the legislation?

Mr. ROBERTSON: Under our act no person may sell to someone who is intending in turn to sell the insecticide unless they sell only to a licensed dealer. In other words, a company selling insecticides in some other province outside of Manitoba can only sell to a licensed dealer within Manitoba.

Mr. JORGENSEN: You are stopping the farmer going to Saskatchewan or somewhere else and bringing it into Manitoba for use in Manitoba?

Mr. ROBERTSON: Under our act any farmer in Manitoba is required to purchase from a licensed dealer, and therefore he would be violating the act if he were to bring it into the province from outside. Under the provisions of our act we can inspect the foodstuffs and we can take action to destroy them if they are contaminated.

Mr. JORGENSEN: There is no way of dealing with dieldrin unless residues are found in the food. In other words, he could use it until he was caught?

Mr. ROBERTSON: Yes, this would be true but he could be caught in two ways.

Mr. CÔTÉ (*Longueuil*): Do you think zero tolerance in dairy products is too strict a limitation? Could we be allowed to have more?

Mr. ROBERTSON: I could not answer this adequate because it would be the responsibility of the federal health department. If they claim a small amount of this in a product is injurious, we would certainly have to conform with their regulations.

Mr. CÔTÉ (*Longueuil*): What is your opinion?

Mr. ROBERTSON: I have no information on this and I could not make any comment.

The CHAIRMAN: I think this would be a good question to ask the Food and Drug Directorate when they come back before us.

Mr. ROXBURGH: What is the main idea behind the licensing of dealers? Is it for publicity and public information? Is it that they are qualified to give information to the buyer when he comes in to purchase? What gain is intended by having the dealers licensed when any person in the store can hand the product to a purchaser without saying a word about it at all? Let us take the hypothetical situation that I read no English; that I take the product from the shelf, purchase it, and take it back to my farm and use it. What advantage do I gain by buying the product from a dealer who is licensed rather than from any other store?

Mr. ROBERTSON: I think your licensed dealer will have some knowledge of the type of product that would be required for the needs of his area; he would be qualified by examination. This is vitally important. He will know also the regulations with regard to the use of certain insecticides. We have already prohibited the use of two compounds for certain purposes in the province; and this would be valuable information to have.

Mr. ROXBURGH: You have decided upon prohibition for certain purposes. However, my hypothesis is that of a young man who is hired in a store actually selling the product when the man who has all the knowledge is away. This salesman has very little knowledge, if any, and he sells the products to me when I ask for them. What advantage is there to be gained by this system?

Mr. ROBERTSON: It would certainly be the responsibility of the person in charge in that store to see that anyone handling the products has some knowledge of them. If one is purchasing a compound about which certain information is required, there is a form which has to be signed and on this form the purpose for which the product is going to be used must be declared. The clerk in turn would know if this was a correct use or not.

Mr. ROXBURGH: As with strychnine or similar products?

Mr. ROBERTSON: Yes.

Mr. WHELAN: Do you say you just license it to control the sale to farmers?

Mr. ROBERTSON: The licensing is only with regard to the sale of insecticides to be used by farmers on livestock or on field crops.

Mr. WHELAN: Then what is the situation in regard to the city backyard farmers?

Mr. ROBERTSON: Our regulations have no control over this.

Mr. WHELAN: Therefore that category of people can use all they want of the product and give it away to all their neighbours, and there is no control over that at all?

Mr. ROBERTSON: Not in our act.

Mr. WHELAN: Mr. Roxburgh has asked a question about the control over the use of drugs and the instructions given by a licensed person regarding the proper use of these chemicals. In view of the fact that the farmer may not follow these instructions, how can you check to see that the chemicals are being used properly?

Mr. ROBERTSON: Both the federal food and drug department as well as our own department perform residual analyses, and whenever we find a residual factor we can then find out if this resulted from misuse.

Mr. WHELAN: Then your licensing regulations have no direct advantage in relation to proper use of these chemicals? You know, of course, who is purchasing these products because records are kept in this regard, is that right?

Mr. ROBERTSON: Yes.

Mr. WHELAN: You have no way of knowing, however, whether a farmer doubles the mixture, or misuses the chemical in some such way?

Mr. ROBERTSON: No.

Mr. WHELAN: Your department can only check in this regard through the channels used by the federal department?

Mr. ROBERTSON: That is correct. We cannot stop the farmer misusing a chemical; however, when a dealer sells a chemical to a farmer he instructs him as to the manner in which it is supposed to be applied and used.

Mr. WHELAN: Your licensing regulation then really does not have any direct effect as to the use of the product, is that right?

Mr. ROBERTSON: That is perhaps true, although instructions are given as to the proper use of a chemical, and we feel that this is very important.

Mr. ROXBURGH: Do you have any agricultural or farm organization representatives in Manitoba who carry out an educational program such as is being carried out in Ontario? I am sure that the farmers of Ontario know more about the use of insecticides and fungicides than any other individual class of persons in Ontario. I have the impression that the backyard farmer is the individual who knows little or nothing about the use of these chemicals. In view of the

fact that the backyard farmer has access to these chemicals, what advantage do you gain by tightening your regulations in regard to the use of these chemicals by farmers?

We are all interested in receiving information in this committee but I will make a wager at this stage that a group of farmers from Ontario would know more about sprays and their chemical contents as a result of their spraying programs than any other group of individuals including backyard farmers. I suggest those individuals do not have a smattering of knowledge as compared to the average farmer regarding the use of these chemicals. We find it difficult to understand why there is a tendency to regulate the use of these chemicals by farmers who use them in large quantities when they are so easily accessible to backyard farmers.

Mr. JORGENSEN: Perhaps Mr. Roxburgh would give us his definition of the term "backyard farmer". We do not have such an animal in our province.

Mr. WILLOUGHBY: I am sure we do not have that type of farmer in Manitoba.

Mr. WHELAN: Mr. Chairman, I think I used the term to indicate the type of individual who grows vegetables in his own backyard in villages, towns and cities and then gives them to his neighbours. These individuals usually grow enough vegetables to feed ten families, and there is no control whatsoever in regard to chemicals used by these individuals because they do not sell their produce.

Mr. ENNS: One unfortunate neighbour could bring a halt to that practice.

Mr. WHELAN: I do not have a garden where I live but I do not have to buy garden products. They are all given to me.

Mr. ROXBURGH: You are a lucky boy.

Mr. WHELAN: Yes, I am, and I have not died from the effects of any spraying.

Mr. ROXBURGH: Did I understand you to say that in Manitoba you do not have a system of education through agricultural representatives? Around Norfolk the fruit and tobacco growers have formed an organization that has field men who travel throughout the area instructing the growers on the proper use of the insecticides and fungicides. In Manitoba do you have agricultural representatives who carry on this educational work in the field?

Mr. ROBERTSON: By all means we have an educational program in this regard through agricultural representatives, and we appreciate also the tremendous assistance we receive from the agricultural chemical people. The licensing aspect to which I have referred is just an additional safeguard.

Mr. ENNS: In the event an impression has been left with this committee that the province of Manitoba does not have an educational program carried on by the department of agriculture in regard to the use of these chemicals, let the record be clear that we do have a very excellent educational program of this type.

Mr. ROXBURGH: I was beginning to worry about the situation.

Mr. ENNS: The province of Manitoba also employs weed control experts who carry out a great deal of this work. I do not feel Mr. Roxburgh need be worried that we have not got sufficient people working in this field.

Mr. WILLOUGHBY: I understand from discussion which took place earlier this afternoon that this legislation resulted from the fact that certain products were found to contain residual contamination from these chemicals, is that correct?

Mr. ROBERTSON: That is correct. Contaminated products were discovered.

Mr. WILLOUGHBY: Was the degree of discovered contamination excessive to the point where it was injurious to human beings, and what is the degree of contamination compared with that found in other provinces?

Mr. ROBERTSON: I cannot answer the question as to the comparison between provinces. I again suggest that this is a question which should be asked of the food and drug people. I am not familiar with the levels of residual contamination from the use of insecticides which are injurious to health.

Mr. WILLOUGHBY: We were given reasonable assurance this morning that the degree of contamination discovered thus far was not serious so far as the average consumer was concerned. The margin of contamination has been established at a very conservative level, and I understand that experiments have been carried out increasing the amount of contamination by 100 times, and even at that level it is not harmful to the individual.

Mr. ROXBURGH: I think that statement had reference to D.D.T.

Mr. WILLOUGHBY: Yes, it had particular reference to the use of D.D.T.

The CHAIRMAN: Perhaps I can assist Mr. Robertson in this regard. Mr. Robertson was not present this morning when Professor Brown testified before this committee, and he does not know what was said at that time.

I think the point Mr. Robertson has made is that his department has been given the task of enforcing the regulations and as far as they are concerned the acceptable tolerance level is zero. Anything above that is illegal. They found they could not enforce the regulations in this regard so the only thing left to do was to remove the product from the market.

Mr. ROBERTSON: That is correct.

Mr. JORGENSEN: Do you know of any comparable action taken on the part of any other province

Mr. ROBERTSON: I do not, no.

Mr. JORGENSEN: I understand that the province of Saskatchewan subsidizes the use of these chemicals, does it not?

Mr. ROBERTSON: I think you should understand, gentlemen, that the distribution of chemicals in the other two prairie provinces is handled in an entirely different manner from the province of Manitoba. In our province the distribution and sale of chemical is left entirely in the hands of the chemical trade. In the other two provinces the provincial governments do purchase and distribute insecticides.

Mr. JORGENSEN: Those provinces can effect some measure of control in that way; is that right?

Mr. ROBERTSON: That is correct. They are controlling the sale and outlet for chemicals in that manner.

Mr. ENNS: Are any insecticides exempt from this type of control, or is this new legislation all inclusive in this regard?

Mr. ROBERTSON: All insecticides for use by farmers on field crops and livestock are covered under this act. In addition, specific compounds must be signed for by the farmer at the time of purchase. Any person selling insecticides of this type to be used by farmers is required to be licenced.

Mr. JORGENSEN: Does this legislation cover only insecticides, or does it also cover fungicides?

Mr. ROBERTSON: The legislation covers only insecticides at the present time.

Mr. BALDWIN: Mr. Chairman, I should like to refer to the point I made in this connection regarding the distinction or similarity between the two acts. You have prohibited, in effect, even though indirectly, the use of these two particular insecticides to which you have referred?

You have done that by refusing to allow the dealers whom you license to sell. Could a situation arise where you could have an insecticide, which is acceptable, let us say, to the federal food and drug people, or under the Pest Control Products Act, and they have not prohibited its use, and it comes into the province of Manitoba where you feel you have the right under your legislation to prohibit it indirectly by refusing to allow the dealers to handle it?

Mr. ROBERTSON: That is correct. Under our legislation we could prohibit the sale of any insecticide just as it has been done with aldrin and dieldrin. However I would like to make it clear that this ban which has been in existence with respect to aldrin and dieldrin is only a restricted use of those chemicals. I outlined to you the crops from which it has been banned for use, and it could still be used for other purposes in our province.

Mr. BALDWIN: You mean you instruct the dealers that anyone applying for these particular commodities must indicate that they will not be used with respect to the purposes for which you have made the ban?

Mr. ROBERTSON: That is correct.

Mr. BALDWIN: You are not attempting to prohibit its general use?

Mr. ROBERTSON: No, it is not a complete ban on the use of those two chemicals.

Mr. WHELAN: Could you elaborate on the uses for which they are banned?

Mr. ROBERTSON: I shall repeat what I said in my opening remarks. This is placing a ban on the insecticides aldrin and dieldrin for use in cereal crops, oil seed crops, forage crops, pasture land, road allowances, drainage ditches, road-way use, used for public purposes, or public utilities, or wasteland. The complete vegetable field is open for use of this product on crops for which it is recommended.

Mr. WILLOUGHBY: It is only restricted for the use of those two chemicals?

Mr. ROBERTSON: Yes.

Mr. WILLOUGHBY: I misunderstood that.

The CHAIRMAN: Are there any other questions?

Mr. BALDWIN: Would it be possible for us to obtain copies of this legislation? It might be of some interest. I do not know if the province of Manitoba could safely spare some copies.

The CHAIRMAN: I am sure we could probably arrange for this, and we probably have it. Would you like to have it printed as an appendix to today's minutes?

Mr. BALDWIN: Yes.

Mr. JORGENSEN: Could the regulations not also be printed?

Mr. ROBERTSON: I have copies here which I could give to the Chairman.

Mr. JORGENSEN: I think it would be sufficient to have them printed as an appendix.

Mr. BALDWIN: I so move.

Mr. JORGENSEN: I second the motion.

The CHAIRMAN: It has been moved and seconded that these be printed as an appendix.

Motion agreed to.

Mr. WHELAN: What is the reaction of the dealers to being licensed and then refused by the people they purchase from, the buyers? Was there any reaction which was not good?

Mr. ROBERTSON: I would think that in general the distributors of the insecticide in Manitoba looked favourably on this act and the licensing aspect.

The CHAIRMAN: Are there any other questions? If there are no further questions of Mr. Robertson, then on behalf of the committee I would like to thank him for taking time out of his business trip on behalf of the province of Manitoba; I would like to thank him very much for appearing before the committee. If there is no further business the meeting now stands adjourned until next Thursday, November 14.

APPENDIX

THE PESTICIDES CONTROL ACT OF MANITOBA

CHAPTER 58

An Act to control and regulate the Distribution and Use of Pesticides.
Bill No. 51

[Assented to May 6, 1963]

Her Majesty, by and with the advice and consent of the Legislative Assembly of Manitoba, enacts as follows:

Short title.

1. This Act may be cited as: "The Pesticides Control Act".

Definitions:

2. In this Act,

"minister,"

(a) "minister" means the Minister of Agriculture and Conservation;
"pesticide,"

(b) "pesticide" means a product used, or represented as a means, for preventing, destroying, mitigating or controlling, directly or indirectly, any insect, fungus, bacterial organism, virus, weed, rodent, or other plant or animal pest, sold to, used or likely to be used by farmers on field crops or livestock;

"regulation,"

- (c) "regulation" means a regulation made under this Act.

Pesticide distributor to obtain licence.

3. (1) No person shall supply, sell, offer for sale or distribute or keep for sale or distribution to a farmer, any pesticide for use on field crops or livestock, unless he first obtains from the minister a licence for that purpose.

Application for licence.

(2) An application for a licence under subsection (1) shall be made to the minister or to such other person designated by the minister and acting under his authority, upon a form prescribed in the regulations, and shall be accompanied by the fee, if any, prescribed under this Act or the regulations; and upon receipt of an application the minister or person designated by him acting under his authority may issue a licence to the applicant.

Sale to unlicensed retailers.

4. No person shall, directly or indirectly, supply, sell, offer for sale, or distribute, any pesticide to any other person who resells it or is likely to, resell it in the normal course of his business to a farmer for use on field crops of livestock unless that other person is the holder of a licence under this Act.

Inspectors.

5. (1) For the purpose of carrying out the intent of this Act, the minister may appoint inspectors who have the power.

(a) to require the production of, and examine any books, records, registers, or documents concerning the supply, sale, distribution or use of pesticides;

(b) to seize any of the books, records, registers or documents under clause (a) for presentation and report to the minister;

(c) to inspect field crops, livestock, or livestock feed supplies, and to subject or cause to be subjected such field crops, livestock or livestock feed supplies, to scientific or chemical analysis for the purpose of determining whether or not they are contaminated with pesticides or contain a

residue of pesticide to a degree considered by the minister to be harmful or injurious to the health of a person or livestock; and

(d) to perform or carry out such other acts as the minister or some other person designated by the minister and acting under his authority may, from time to time, require an inspector to perform.

Destruction of contaminated crops, etc.

(2) Where, under this section, any field crops, livestock or livestock feed supply is subjected to scientific or chemical analysis and found to be contaminated with pesticide or to contain a residue of pesticide to a degree considered by the minister to be harmful or injurious to the health of a person or livestock, the minister may cause the destruction of the field crop, livestock or livestock feed supply, as the case may be.

Authorization of dominion officers.

(3) The Lieutenant-Governor-in-Council may authorize officers and inspectors of the Department of Agriculture of Canada to be *ex officio* inspectors under this Act; and every person so authorized shall have all the powers and authority of an inspector appointed under this Act.

Lieutenant-Governor-in-Council may ban pesticide.

(4) Notwithstanding the provisions of subsection (2), the Lieutenant-Governor-in-Council may, if he deems it necessary, ban or prohibit the use of any pesticide in Manitoba.

Purchase of pesticide from licensee only.

6. No person shall acquire or obtain a pesticide for use on field crops or livestock, other than from a person licensed under this Act.

Offences and penalties.

7. Every person who

(a) violates or fails to comply with any provision of this Act,

(b) wilfully obstructs, hinders, resists or in any way opposes an inspector appointed under this Act and charged with the enforcement thereof,

is guilty of an offence and liable, on summary conviction, to a fine of not less than one hundred dollars and not exceeding one thousand dollars, or to imprisonment for a term of not less than sixty days and not exceeding six months.

Regulations.

8. For the purpose of carrying out the provisions of this Act according to their intent, the Lieutenant-Governor-in-Council may make such regulations and orders as are ancillary thereto and are not inconsistent therewith; and every regulation and order made under and in accordance with the authority granted by this section has the force of law; and without restricting the generality of the foregoing, the Lieutenant-Governor-in-Council may make regulations and orders, not inconsistent with any provision of this Act,

(a) prescribing a licence fee, if any, to be paid by a person under this Act or the regulations;

(b) prescribing the qualifications and the manner of appointment of inspectors;

(c) requiring the production and examination of books, records, registers or other documents by an inspector;

(d) requiring the scientific or chemical analysis of any field crop, livestock or livestock feed supply;

(e) requiring the renewal of licences under this Act;

(f) prescribing the registers, records or books to be kept by a person under this Act;

(g) prescribing the information or data to be shown in the registers, records or books;

(h) prescribing declarations or affidavits and the contents thereof to be made under this Act and the form of application for licences issued under the Act;

(i) prescribing the qualifications of an applicant for a licence under this Act;

(j) exempting a product or substance or group of class of products or substances from the definition of pesticide as defined in section 2.

Consolidated Fund.

9. All moneys required to be expended for the purpose of this Act shall be paid from and out of the Consolidated Fund with moneys authorized by an Act of the Legislature, to be so paid and applied.

Commencement of Act.

10. This Act comes into force on a day fixed by proclamation.

MANITOBA REGULATION 42/63

Being

A Regulation under The Pesticides Control Act

(Filed May 28th, 1963).

1. In this regulation "Act" means "The Pesticides Control Act".
2. (a) The fee for a licence or renewal of a licence under the Act is ten dollars.
(b) Every licence and every renewal of a licence issued under the Act expires on the thirty-first day of March in each year but upon application therefor and payment of the prescribed fee a licence may be renewed.
(c) For the year 1963, a person required to obtain a licence under the Act shall do so on or before the seventeenth day of June, 1963.
(d) Where a corporation selling, distributing or otherwise supplying pesticides, maintains more than one outlet for the sale, distribution, or supply of pesticides, each such outlet shall apply for and obtain a licence under the Act.
(e) Every licensee licensed under the Act shall prominently display the licence in his place of business.
3. An application for a licence or renewal of a licence shall be made upon the form set out in Schedule "A" to this regulation.
4. (a) Every licensee under the Act shall keep and maintain in a form as set out in Schedule "B" to this regulation, a record with respect to the following pesticides commonly known as:
 - (i) dieldrin,
 - (ii) aldrin,
 - (iii) heptachlor,
 - (iv) endrin, and
 - (v) DDT

and with respect to any product or substance containing any one or more of these pesticides.

(b) Every person acquiring or purchasing or to whom a pesticide mentioned in clause (a) is supplied by a licensee shall complete and sign and every licensee shall obtain from every person to whom he sells, distributes, or otherwise supplies a pesticide mentioned in clause (a) a declaration in triplicate upon a form as set out in Schedule "C" to this regulation and supplied by the minister.

(c) Every licensee shall submit to the minister

(i) for the period extending from the second day of March to the first day of September in every year, and

(ii) for the period extending from the second day of September to the first day of March of the next following year.

a copy of the record mentioned in clause (a) and the original copies of the declaration mentioned in clause (b).

(d) The records or documents to be submitted to the minister under sub-clause (i) of clause (c) shall be submitted on or before the thirtieth day of September in each year and under sub-clause (ii) of clause (c) on or before the thirty-first day of March in each year.

4. Any product or substance that is designated primarily as a product or substance for controlling, killing, mitigating, or destroying fungus, virus, weed, rodent, or bacterial organism is not a pesticide as defined in the Act.

SCHEDULE "A"

Do not write in this space



Licence No.
Receipt
Date Issued

PROVINCE OF MANITOBA

Department of Agriculture and Conservation

APPLICATION FOR PESTICIDE DEALER'S LICENCE

under

"The Pesticides Control Act"

Name of Applicant

Address

Name of person in charge of selling, distributing or supplying pesticides

.....

Dated at in Manitoba, this day of

....., 19

.....
Signature of Applicant

(Fee \$10.00)

SCHEDULE "B"



PROVINCE OF MANITOBA

RECORD OF PESTICIDES ACQUIRED

[illegible]

Stock of Pesticides on hand as of March 1, 19.... - September 1, 19....

.....
Signature of Dealer

SCHEDULE "C"



PROVINCE OF MANITOBA

.....
Vendor's Name

No.

DECLARATION OF PURCHASER

As required by Manitoba Regulation /63
made under The Pesticides Control Act.

I,
ofacknowledge purchase of
(Address)
.....of.....to be used by me
on.....situated at.....and hereby
(State type of crop or livestock)

undertake to use this pesticide strictly in accordance with the instructions and restrictions set out on the container, realizing that any departure from those instructions or restrictions may result in seizure and destruction of any field crop, livestock or livestock feed supply found to be contaminated with the pesticide.

....., 19.....
Signature of Purchaser Date

(The Manitoba Gazette, June 8, 1963—Vol. 92, No. 23)

MANITOBA REGULATION

under The Pesticides Control Act

October 23, 1963.

1. No person shall use Dieldrin or Aldrin or any compound containing Dieldrin or Aldrin on or in respect of
- (a) fields on which forage crops, cereal crops, or oilseed crops are seeded or growing; or
 - (b) pasture land, road allowances, drainage ditches, rights-of-way used for public purposes or for public utilities, or wasteland.

HOUSE OF COMMONS
First Session—Twenty-sixth Parliament
1963

SPECIAL COMMITTEE
ON
FOOD AND DRUGS

Chairman: Mr. HARRY HARLEY

MINUTES OF PROCEEDINGS AND EVIDENCE

No. 11

THURSDAY, NOVEMBER 14, 1963

WITNESSES:

Mr. J. M. Bentley, President of the Canadian Federation of Agriculture, Edmonton (Alberta); Mr. W. S. McLeod, Supervisor, Pesticide Unit, Plant Products Division, Department of Agriculture.

ROGER DUHAMEL, F.R.S.C.
QUEEN'S PRINTER AND CONTROLLER OF STATIONERY
OTTAWA, 1963

SPECIAL COMMITTEE ON FOOD AND DRUGS

Chairman: Harry Harley

Vice-Chairman: Mr. Rodger Mitchell

and Messrs.

Armstrong
Asselin (*Richmond-
Wolfe*)
Baldwin
Cashin
Casselman (Mrs.)
Côté (*Longueuil*)
Enns

Fairweather
Gauthier
Gelber
Howe (*Hamilton South*)
Jorgenson
Macaluso
Marcoux
Nesbitt

Orlikow
Otto
Pennell
Roxburgh
Rynard
Whelan
Willoughby.—24.

(Quorum 10)

Gabrielle Savard,
Clerk of the Committee.

MINUTES OF PROCEEDINGS

THURSDAY, November 14, 1963.
(12)

The Special Committee on Food and Drugs met at 10.05 a.m. The Chairman, Mr. Harry Harley, presided.

Members present: Messrs. Armstrong, Baldwin, Cashin, Gelber, Harley, Jorgenson, Howe, Mitchell, Nesbitt, Otto, Roxburgh, Rynard, Willoughby (13).

In attendance: From the Canadian Federation of Agriculture: the President, Mr. J. M. Bentley, of Edmonton, Alberta; Mr. David Kirk, Executive Secretary; Mr. Lorne Hurd, Assistant Executive Secretary; and Dr. Armand Lacasse, Economist. From the Department of Agriculture: Mr. W. S. McLeod, Supervisor, Pesticide Unit, Plant Products Division.

The Chairman opened the meeting and introduced the representatives of the Canadian Federation of Agriculture.

As a copy of the brief had been distributed in advance to the members of the Committee, on motion of Mr. Baldwin, the Committee agreed that it be taken as read, and Mr. Bentley was invited to comment thereon.

The witness emphasized on the manner in which the Province of Alberta controls the use of chemical compounds with regard to the dairy business, and was questioned thereon.

Mr. McLeod supplied information on a court case which developed in that province, after misuse of an insecticide.

There being no further questioning, the Chairman thanked the witnesses on behalf of the Committee.

The Chairman read the list of future witnesses and asked the members if they had other suggestions.

Mr. Nesbitt suggested that Mrs. Rachel Carson be called.

Mr. Otto moved, seconded by Mr. Baldwin, and the Committee agreed that this matter be referred back to the steering committee.

At 10.50 a.m. the Committee adjourned until Tuesday, November 19, at 9.30 a.m.

Gabrielle Savard,
Clerk of the Committee.

EVIDENCE

THURSDAY, November 14, 1963.

The CHAIRMAN: Gentlemen, we have a quorum. With us this morning we have Mr. J. M. Bentley who is a member of the dairy farmers organization and also president of the Canadian Federation of Agriculture. With Mr. Bentley is Mr. Lorne Hurd, assistant executive secretary of the Canadian Federation of Agriculture.

I believe that yesterday or the day before all of us received a brief from the Canadian Federation of Agriculture. Is it the wish of the committee that Mr. Bentley read the brief, or I wonder if everyone has had an opportunity to read it.

Mr. BALDWIN: I would move that we take it as read and ask Mr. Bentley to comment on what he thinks are the highlights of it.

The CHAIRMAN: Is there any other discussion? Is this the feeling of the committee? Agreed.

Would you like to do that, Mr. Bentley; instead of reading the brief you might just summarize it.

(The brief of the Canadian Federation of Agriculture follows):

SUBMISSION BY THE CANADIAN FEDERATION OF AGRICULTURE TO THE SPECIAL COMMITTEE OF THE HOUSE OF COMMONS ON DRUGS AND CHEMICAL CONTAMINATION OF FOOD

1. The Canadian Federation of Agriculture appreciates the opportunity which it has been afforded to appear before and to participate in the hearings of this Special Committee of the House of Commons. Your consideration of the potential dangers of contaminating food supplies through the use of chemicals to control weeds, insects and pests, is timely, and can be of real value and service to the Canadian people, including farm people who we are here to represent.

2. As a major user of chemicals for pest control purposes, the farmer has a critical stake in the issues that are before you. This stake can be expressed in terms of the farmer in his occupational role, and as a citizen of the country.

As a farmer he has two principal concerns:

He has an interest in the economic implication of the use of agricultural chemicals in his business.

He has an interest in the protection of his own health and that of his family on the farm where agricultural chemicals are used.

3. As a citizen the farmer's concerns are three in number.

He has an interest in protecting the health of the food-consuming public. It is necessary that government research, licensing, regulatory and control procedures involving agricultural chemicals be adequate to protect the nation's food supply from contamination.

He has an interest in the avoidance of economic losses to the nation through the misuse of chemicals, and the advantages to the nation of their proper use.

Finally, he has an interest in the preservation of the national rural environment for esthetic and recreational reasons.

4. Taken together, these farmer interests explain why the Federation and its constituent bodies give strong support to government efforts to protect the health of the farmer and consumer, and why we welcome the study that your Committee has underway. It seems to us that periodic investigations of the kind you are conducting—into a field where new pest control products and measures are constantly being developed—are both desirable and necessary.

5. The Federation recognizes and regards the object of your study as being of a highly technical nature. Whether certain chemicals should or should not be used, or whether they should be used in a particular way when licensed, either in farming or in other sectors of the economy, are essentially technical questions. The answers to these questions depend on the gathering and/or examination of scientific evidence, and the exercise of judgment and decision on the basis of such evidence. It follows from this that public policy with respect to the use of chemicals must also depend on a highly developed and constantly increasing body of technical knowledge.

6. However, from a policy standpoint the matter does not rest there. Equally eminent scientists can agree on the scientific facts that are required to make a policy decision, but they may disagree in their judgments on what to recommend as a course of policy. In the final analysis then, lay people in positions of responsibility must accept a responsibility for participating in the making of many important policy judgments. To do this, of course, they must be provided with all the scientific facts. Legislative bodies, of course, have the primary responsibility in policy formulation.

7. Among the policy decisions that must be made in regard to the use of agricultural chemicals are those related to:

The degree, if any, to which a given product is detrimental to vegetation (other than weeds), beneficial insects (bees), domestic or wild animals or public health when used according to directions. In establishing a judgment in this connection, proper attention must be given to the long term residual effect of repeated applications of the chemical in question.

The hazards, if any, to water, animal and human life arising from the application, in the same geographic area, of a number of chemicals, each designed for quite different purposes and each used according to their own prescribed directions.

The required level of expenditures by governments on research, law enforcement and public education dealing with the use of chemicals.

8. The Canadian Federation of Agriculture thinks it is important that both the users of the chemicals and the consuming public be brought completely into the picture in regard to these and other policy questions on some kind of continuing basis. One approach to this has been developed in Alberta. In that province, producers, processors and handlers of milk have joined with scientific and government personnel to work together, through a series of committees, on the problems associated with the use of agricultural chemicals on dairy farms.

9. The development of some such method of getting all the relevant data and experience together for the common good would seem to us to have merit on a national basis. A regular consultative procedure would make possible the formulation and implementation of policy decisions that everyone concerned

knew the reasons for. It could materially reduce, if not eliminate, harmful controversy based on incomplete or erroneous information that all too often results when policy decisions are taken without prior consultation. In addition, the implementation of a consultative procedure could help to identify policy needs, including the need for new research.

10. It goes without saying that few if any farmers have or can be expected to have expert knowledge on the agricultural chemicals they use. This means, of course, that while they individually and collectively have a heavy responsibility to follow to the letter the instructions that are issued with chemical compounds used in their operations they must rely, along with all other citizens, on government regulation and control of the chemical industry.

11. The Canadian Government has developed over the years laws and regulations respecting the licensing, sale and use and misuse of chemicals, as well as the agencies to administer these laws. We refer, of course, to the Pest Control Products Act, and the Food and Drugs Act, and the scientific and administrative personnel charged with the responsibility of enforcing them. The Federation does not present itself as a body competent to say with assurance that these pieces of legislation and their enforcement are adequate to provide the protection to which the public is entitled. We can, however, offer these views, which may be self-evident, but which we believe are worth stressing.

12. The development and use of agricultural chemicals has contributed in great measure toward increasing the world's food supply during a period of rapidly expanding population and increasing urbanization and industrialization. Canada has been in the forefront of the use of such chemicals.

13. Without these chemicals the commercial production of most fruits and vegetables would be rendered almost impractical, and our supplies of meats, poultry, milk, eggs, grains and special crops would be seriously reduced.

14. The elimination of chemical pest control methods could result in a deterioration in the quantity of our food supplies, could increase the threat of disease in the human population, and could reduce significantly the quantity of food coming to market, and, hence, make food more costly.

15. Agricultural chemicals are, of course, one of the important tools that farmers must employ if they are to remain in the business in which they are engaged. Otherwise their products will frequently fail to meet the quality standards required by law, and they will fail to be competitive with farmers at home or abroad who are engaged in the same type of production.

16. The development and use of agricultural chemicals has been beneficial in increasing the quantity and quality of our food supplies, and in reducing food costs to the consuming public. Agricultural chemicals are here to stay. What is important is to be fully cognizant of the potential hazards involved in their use, and for the government to continue to work out, in collaboration with the manufacturers and users, a system of control, backed by rigid enforcement, that will ensure the public's safety and its esthetic interest in the rural environment.

17. Your study can be highly useful in two ways, providing sufficient expert evidence is placed before you. As legislators with a primary responsibility to ensure the public welfare, you can satisfy yourselves of the adequacy or otherwise of present legislation and regulations, and make any necessary recommendations. In so doing, you can give not only Parliament, but the general public, a sense of perspective and understanding of the important place agricultural chemicals hold in the production of food stuffs, and improve public confidence in the reliability of the procedures followed within the government to ensure the safety of the public from food contamination.

18. In conclusion, the Federation reiterates the essential points of the position it has taken in this presentation.

Agricultural chemicals are here to stay. They are of profound importance in providing adequate supplies of high quality food products for growing populations at home and abroad.

Farmers have a critical stake in efforts made to safeguard the food supply from harmful chemical contamination. They recognize the potential dangers from the improper use of chemicals, and they support government regulation and control of the chemical industry to the extent required to protect the public interest.

Only highly trained, competent scientists can be relied upon to provide the data necessary for policy making decisions relative to the chemical industry. However, it is the job of legislative bodies to assess the adequacy of the data upon which policy is based, and the adequacy of national policy and nation policy-making procedures in this field.

The Federation believes it would be useful in the policy making process for legislative bodies to involve representatives of the users of the chemicals and the consuming public on a continuing basis. In this connection it may be noted that the Pest Control Products Act contains a provision for an advisory board that is not now being used.

The study of this Special Committee can be highly useful, both in assessing the adequacy of present legislation and regulations dealing with chemicals, and in improving public confidence in the procedures followed within the government to ensure a safe food supply.

Respectfully submitted,

CANADIAN FEDERATION OF AGRICULTURE.

Mr. J. M. BENTLEY (*President, Canadian Federation of Agriculture*): Thank you very much Mr. Chairman. It is a pleasure for us to appear before you today on this most important matter. I think the matters discussed in this brief in the main are pretty well known to all members of the committee. I believe possibly we all realize the importance of these chemicals in the growing of crops. I do not think there is any argument in that direction.

The method of control in the use of these chemicals is a very important matter and one which receives a great deal of discussion at this time. I would like to emphasize just how we deal with the subject in Alberta. I happen to be a member of a committee which has to do with antibiotics, herbicides and pesticides in dairy products in the province of Alberta. This committee, of which I happen to be a member, was set up by the Alberta Dairymen's Association. In the province of Alberta this association has representatives of the producers as well as of the plants, distributors and processors in the dairy business. Therefore, we have all the people in this association who are interested in the dairy business in the province of Alberta. We have set up different committees in various fields. As I said, I am a member of the one on antibiotics, pesticides and herbicides. On this committee we have Mr. Daniels of the federal food and drug department, Dr. Kadis who is one of the laboratory technicians in the Edmonton dairy lab., and Mr. Ray Dixon who is doing dairy improvement work in the province of Alberta; we also have representatives of the plants and, myself, as a representative of the producer interests.

In the province of Alberta we have a sampling procedure by which periodically and systematically samples of milk are taken as it comes in. If we have any difficulties at all with regard to any residues, either from antibiotics or from herbicides or pesticides, then we track this right down to

the individual farmer concerned. We think this is the best way to do it. The plants, the processors and distributors have promised that their field men will be available in this work and will go to the actual producer who is having some difficulty with residues in his dairy products. By this means we do not attack the situation by scare headlines, but by actually getting to the man who produces the product and is having some difficulty. We show him why he is having his difficulty, and get him to realize he has a stake in this industry and that it is important high quality products be available for the consumer.

As a result we have had co-operation all down the line through the processors, the lab. technicians, and the dairy group of which I happen to be president, the Edmonton district milk producers association. Periodically we send out information in the milk checks to our members showing how important these matters are, and pointing out that we want to safeguard the health of the people using these products. We point out that even the farmer has a great scientific stake in preserving the high quality of products which go to the consumer.

In the main this is what this particular committee does. We have four of these committees in the Alberta Dairymen's Association, but this particular committee deals specifically with the matters under discussion here today.

I think, Mr. Chairman, basically that is what we are trying to do. If there are any questions, I will attempt to answer them.

Mr. WILLOUGHBY: Mr. Chairman, I would like to ask how they go about selecting these samples in a large province like Alberta. Do you mean that you sample every farmer's produce regularly?

Mr. BENTLEY: So far as the whole milk is concerned, this is sampled periodically. All milk in Alberta which goes for processing for fluid purposes is picked up in bulk tanks and a sample is taken each day. Periodically this sample is tested for antibiotics, pesticides or adulterants of any kind. This is done at the plants; this is a regular procedure. Of course, the farmer does not know how often this takes place; it is a periodic sampling of his product. It is impossible to have this testing done on every pickup, but there is a sampling taken on every pickup and the farmer does not know on which day the sample actually will be tested; it is a periodic procedure.

Mr. WILLOUGHBY: Is the testing done in the central laboratory or in the creamery?

Mr. BENTLEY: They actually do this in the dairy lab in Edmonton; that is, the actual testing.

Mr. JORGENSEN: Who provided the initiative in setting up this type of organization? I am very interested in it.

Mr. BENTLEY: It was the Alberta Dairymen's Association which instituted this whole program. We feel that we, as producers, the distributors and processors all have a stake in this. We do not feel that one can correct matters by scare headlines in newspapers, or by this sort of approach. Actually we want to get to the man who produces the cream or milk who is having some difficulty, and consequently in this way get down to the root of the trouble. The processors have field men who go out to the particular farm where there is difficulty.

Mr. JORGENSEN: Is this organization making any effort to set up similar groups in other provinces?

Mr. BENTLEY: We would hope that in the other provinces they would conduct a similar program. The Alberta Dairymen's Association, of course, is an entity in itself and has no power over any other province. So far as the Canadian federation is concerned, we certainly will make every effort possible to have other provinces conduct similar programs because we think it is well worth while.

Mr. JORGENSEN: Do you think this could be applied to other crops, other than in respect of dairy production? For example, would it be possible to set up the same type of organization in respect of cereal crops, and the like?

Mr. BENTLEY: You can get residue from crops which have been treated with chemicals if they have been improperly applied. This shows up, of course, in the milk supply. This is the way you get it.

Mr. JORGENSEN: I realize this, but there are farmers who are not dairy farmers and their end product would not find its way into the dairy labs. I am thinking, for instance, of grain farmers.

Mr. BENTLEY: I expect you are thinking in terms of grain which is used, say, for beef production. Usually there is a longer term involved. In the case of forage used in dairy production, the feed contamination would show up right away. It probably would not show up so quickly in the case of feed or forage for beef cattle. There would probably be a longer period in which the residue may have an opportunity to dissipate, and probably it would not show up so quickly.

Mr. JORGENSEN: You feel there is a great danger in the field of milk production.

Mr. BENTLEY: The product is sold tomorrow or the next day; a very short period of time is involved; whereas in respect of beef or hogs, or anything of this kind, there would be a longer period. It probably would not be so serious, but it could be.

Mr. WILLOUGHBY: Have you had to take any action in the way of suspension against any producer?

Mr. BENTLEY: There have been cases where producers have been suspended.

Mr. ROXBURGH: When you take these samples from the main tank, how are you going to check back to the producer himself?

Mr. BENTLEY: An actual sample is taken in his dairy barn. Every time there is a pickup from these farms, the sample is taken in the farmer's own milkhouse, and while the milk may go into a bulk tank, there is a record of his particular sample with a number on it.

Mr. BALDWIN: In the second last paragraph of your brief on page 7 you have made a very strong suggestion. Is this based on your experience in Alberta?

Mr. BENTLEY: Yes. I certainly think that is true. It is necessary to involve producers in this process in order to make them aware of the financial stake they have in their particular industry and how important it is that they receive the continued confidence of the consuming public in the product which they are producing. I think it is essential to bring this home to the producers. We in the producers' organization are bringing this home to them; we are giving them an awareness of the financial stake they have in this industry; we tell them this is the way they can preserve their own industry.

Mr. BALDWIN: What is the make up of this body in Alberta? I think you said there was a representative from the food and drug directorate, and someone from the Alberta dairy industry.

Mr. BENTLEY: We have a representative of the plants, representatives of the producers, a representative from the dairy testing lab., and a representative from the government who is in the dairy improvement service.

Mr. BALDWIN: That would be of the provincial government?

Mr. BENTLEY: Yes.

Mr. BALDWIN: And the federal government food and drug directorate?

Mr. BENTLEY: Yes.

Mr. BALDWIN: I know you cannot answer for the other provinces, but in respect of the general over-all problem of pesticides and other potentially dangerous materials, do you envisage there is any value in an undertaking of this nature on a federal basis involving producers, others in the industry, and representatives of government? Do you feel that a very useful function may be performed in this manner?

Mr. BENTLEY: This is possible. I do not know whether or not you are aware of it, but I understand that the province of Alberta receives a grant of \$7,500 towards this testing and sampling procedure. They have asked that this be continued and we, as producers, have asked that it be increased. I do not know whether or not this committee knows anything about this. I do not know whether other provinces are receiving this grant, or whether it is applicable only to Alberta. I know that at our last meeting which was held about ten days ago, we continued to ask for this annual grant of \$7,500 towards this program. It does not begin to cover the cost, but it is a federal grant which assists in this program. We would hope that the other provinces would make use of this grant. I imagine it would be available to all of the provinces.

Mr. JORGENSEN: Do you know on what authority that grant is made?

Mr. BENTLEY: I do not know. Certainly we passed a resolution that this grant be continued. Mr. Hurd suggests it is probably through the federal Department of National Health and Welfare. I know we get it, have asked that it be continued, and if possible increased.

Mr. BALDWIN: We just hope it will not be one of the joint programs which will be eliminated.

Mr. OTTO: Is all whole milk processed in one way or another before it is distributed to the public in Alberta?

Mr. BENTLEY: Well, I would say practically all the milk in the province of Alberta is. It has to be processed because practically every area of which I know, even very small ones, have a requirement now that pasteurization of milk take place. Therefore I would say that all this milk is processed.

Mr. OTTO: Do you, does your committee or your association, know of any process available by which the toxic element, if any, could be removed in the processing of the milk?

Mr. BENTLEY: I am not a technical man, but I understand there is new equipment in this particular field. I certainly would not like to give evidence in respect of this because I do not know. However, I understand there is equipment.

Mr. OTTO: Do you think that in time it will be possible, in the field of milk, to ensure the removal of all toxic elements before sale to the public?

Mr. BENTLEY: I think possibly this may happen, but whether or not it is completely possible at the present time, I do not know; I would not think it would be possible yet.

Mr. BALDWIN: Mr. Chairman, I wonder if Mr. Bentley knows anything about an issue which developed in Alberta, and which I think was decided in the courts. I believe this was a case of misuse of pesticides in agricultural operation and an action was brought against a producer or farmer, a municipality, and the company which produced the drug in question. The reason I am asking this is that I believe it was followed up by government action which now compels a farmer, who obtains a pesticide through a municipality, to sign a declaration in respect of the use to be made of it and accept responsibility. Are you aware of this case or the consequences of it?

Mr. BENTLEY: Are you referring to the case down around Lethbridge?

Mr. BALDWIN: Yes.

Mr. BENTLEY: This was a case where a person, I think, sprayed a certain material on some very valuable bulls and there was a court case over it. The difficulty here was that perhaps he did not conform with the regulations which he was supposed to follow in the spraying of these cattle.

Mr. BALDWIN: Am I right that action was brought and that a judgment was recovered against the municipality and against the company which produced and sold the drug as well as the farmer?

Mr. BENTLEY: I believe there was a judgment, but I think possibly what happened was the agricultural service board in that particular municipality may have had something to do either with the application or with the selling of this particular product, and that may be why they became involved.

Mr. BALDWIN: Are there now certain regulations with regard to taking out these drugs and signing?

Mr. BENTLEY: The result has been that the agricultural service boards now are very reluctant to give any advice or information of any kind, because they are scared to death that they may involve the municipality in a lawsuit. I think this is unfortunate, but it may be the end result. They probably have been told by their superiors not to give any advice of any kind with regard to some of these products.

Mr. BALDWIN: There is no legislation in Alberta similar to that mentioned in respect of the province of Manitoba?

Mr. BENTLEY: I do not think so.

The CHAIRMAN: Before we leave this particular subject, I think there is a gentleman from one of the federal departments who might have something to say on this matter.

Mr. W. S. MCLEOD (*Supervisor, Pesticide Unit, Department of Agriculture*): The case referred to is sometimes called the case of the poisoned bulls. The suit was brought by a farmer named Mirza Pack against Oliver Chemical Company, Lethbridge, the District of Warner in Alberta, and the foreman of the spray crew, Dwayne Michelson. The case was heard and judgment was brought against the defendants. The case was appealed this fall and the judgment is now pending. Is there further information I could give you in respect of this case? This was an application of an insecticide directly to the breeding bulls for the control of lice. It does not have any impact on the production of milk.

Mr. BALDWIN: Did the Alberta government take any action following this? I thought there was something whereby the farmers who use these pesticides now have to sign a form and accept full responsibility.

Mr. MCLEOD: For at least the year 1963 and possibly even 1962 farmers purchasing dieldrin for the control of grasshoppers were required to sign a declaration that they had read the directions for the use of this chemical, and that they would use the chemical as directed.

Mr. BALDWIN: They would sign this before they could obtain the chemical?

Mr. MCLEOD: This is my understanding.

Mr. NESBITT: For which chemicals that are of a noxious nature and likely to get into milk is the testing made? I gather that dieldrin is one. In respect of what other chemicals do they test?

Mr. BENTLEY: There is treatment for mastitis in cows, and so on, and penicillin, aureomycin, and all these different products may show up in the milk. The regulation requires that 72 hours must elapse before you can use the milk of a cow which has been inoculated for any purpose whatsoever.

Mr. NESBITT: Perhaps you misunderstood my question. When these samples of milk are taken and tests made with the idea of attempting to trace noxious substances, I gather there would have to be a separate test for each chemical you are looking for. I believe there are a number of poisonous substances which are tested for, and I am wondering how this is done.

Mr. BENTLEY: I am not a technical man. You would have to call Dr. Kadis of the testing lab. at Edmonton to tell you all the different things they test for.

Mr. NESBITT: Would one test show up residues of these different types of pesticides

Mr. BENTLEY: I would not be sure of that. I am afraid I am out of my depth here. I do not know. I know they do have different results, because I have seen some of these results. They arrive at different things which may be in this particular product.

The CHAIRMAN: I think this will be a very good question to ask the representatives of the food and drug directorate when they appear before us again.

Mr. NESBITT: I would think there would have to be a number of tests carried out.

Mr. BENTLEY: That is possible.

Mr. NESBITT: There may be a great many things, some of them of a stable character, and some of an unstable character.

Mr. MITCHELL: Do you know whether there is an allowable level of pesticide or chemical content over which it would be called dangerous? Is there an allowable amount which has no bearing on human consumption in respect of being dangerous?

Mr. BENTLEY: As a layman I do not know. Apparently even the scientists disagree in respect of what level in this particular field is detrimental to human health. I have been a member of a committee which deals with fall-out, for instance, in relation to milk production and the residues such as iodine 13 and strontium 90. Even the scientists today in Great Britain, Canada and the United States disagree in respect of the levels which are injurious to human life. As a layman I cannot say at what level we consider something injurious. The ideal, of course, is zero.

Mr. MITCHELL: I realize that.

Mr. BENTLEY: I could not say what level has been decided on. I do not know because these scientists have different opinions among themselves.

Mr. MITCHELL: You would assume that there is an allowable level within which the scientists or chemists would consider they would not be injurious?

Mr. BENTLEY: I think this is true; but from the point of view of the producers we are attacking this on the basis that we do not want any residue and that proper precautions should be taken to see that there is no residue. However, you are quite right, I think, that there probably is some which might not be of any harm to the human system. From our standpoint, the way to attack it is that if there is any there we want to get to the producer and show him how he can correct it.

The CHAIRMAN: Are there any other questions, gentlemen?

Mr. WILLOUGHBY: Would you not consider that there might be a minimum amount of residue in milk when spraying has been done, even though it has been done according to instructions? I should think there must be traces in these cases when pesticides have been used.

Mr. BENTLEY: There is a lot of spraying done. I have seen figures on thousands of tests which have taken place and I have been amazed at how

very little of it showed up at all. So it is obvious that if the proper precautions are taken you can get a zero of contamination. Therefore I do not think it is altogether impossible.

Mr. HOWE (*Hamilton-South*): What would be the purpose of the expense in removing something which is proven to be harmless?

Mr. BENTLEY: Well, of course, I am not in a position to say. I do not think we should spend money needlessly in trying to remove something if it is proven to be harmless. But you can get into an argument as to what is harmless and what can be harmful. The ideal situation is to try to obtain negative results in these things.

Mr. HOWE (*Hamilton-South*): There must be some substances which would be very costly to remove, and if they were proven to be harmless after investigation, why bother to remove them?

Mr. BENTLEY: I think that is perfectly right.

Mr. NESBITT: I do not want to get technical, but none of us here are experts. When you say substances are removed from milk, are they actually removed in the layman's way of thinking, or removed by prevention? In other words, if after testing milk is found to contain certain offensive substances, is that milk supply treated in some way to remove the substances, or does the producer say "your milk is contaminated and we will not take any more of it until it tests properly".

Mr. BENTLEY: As far as I know in the main they try to remove these substances. In other words, it is a pretty severe penalty on a producer to have to hold back his milk or to dump it down the drain.

Mr. NESBITT: Contaminated milk is not destroyed. When there are obnoxious substances in it, it is not put on the market?

Mr. BENTLEY: That is right.

The CHAIRMAN: Are there any other questions? If there are no other questions, then on behalf of the committee I thank Mr. Bentley of the Canadian Federation of Agriculture for coming before the committee today and giving us his evidence.

Before we adjourn I would like to ask the members of the committee if they know of any person who has any further evidence they would like to have called before the committee?

In order to refresh your memory let me say that next Tuesday we shall have Dr. Coon, a toxicologist from Jefferson University, Philadelphia; on next Thursday we shall have the Cyanamid Company from Niagara Falls, manufacturers of insecticides and pesticides; on November 26 we shall have the Canadian Agricultural Chemical Association who will present a brief, and on Thursday, November 28, we shall have the food and drug directorate back before the committee again.

Mr. NESBITT: Have you ever thought of asking Miss Carson, who aroused widespread interest in this subject? I know she is a United States citizen, but perhaps she might be invited to appear.

The CHAIRMAN: What is the feeling of the committee on this matter? This was brought up in the steering committee and we did not think there would be anything to gain by it. I think everybody has read her book.

Mr. OTTO: Is she a technician or a specialist in these things?

The CHAIRMAN: She is a biologist, I think.

Mr. MITCHELL: In reply to Mr. Nesbitt may I say her book has raised a lot of controversy and argument. If she were called here, my impression is we would merely be rehashing a lot of adverse criticism that has already been

made against her publication. I do not believe it would add anything to our committee. That is the feeling I have. Since she would have to come from some distance, I do not feel it should be necessary to call her.

Mr. NESBITT: I think we are here to get all points of view. I have read Miss Carson's book, and I have heard the evidence here. I think that if she has some qualifications—she has obviously made a study of the thing sufficiently to direct continental-wide if not world-wide attention to this subject the committee might be doing very well in calling her. It would certainly gain some information from her if she were invited to appear before us, and if she agreed to come it would certainly draw further attention to this study. We never can tell what witnesses will provide us with additional information. The best we can do is to call the ones likely to be of help to us, and to hope for the best. I understand Miss Carson lives in New York, although I may be mistaken; and that is not very far away. Certainly one day would be adequate, and there would be no unusual expenses involved in the matter.

Mr. OTTO: Perhaps we could go to New York. That is another alternative.

Mr. BALDWIN: That is another idea. Perhaps the steering committee might consider it. I have read her book a couple of times and what struck me was not only the comments she made, but also the fact that she cited a great number of references and authorities, and it would appear at first blush that these would give more weight to statements which might otherwise not be accepted. It could be that if she were here it would be interesting to question her on the basis of the statements she has made. She referred to a number of scientific publications, tests, and experiments which she gathered from all of the world. It might be that some of her statements do not rest on a too solid foundation. But maybe they do.

I do know that she appeared before a congressional committee in the United States, and I have had a chance to read some of her evidence given there. In response to questioning she gave support to what she had written by producing certain references and authorities. That is the only aspect I think which might be useful. We all can read her book, but as to the authority of her book we might test it to ascertain whether it is accurately founded or not.

The CHAIRMAN: Is there any other discussion? If it is your wish we could take this matter up again in the steering committee, talk it over, and deal with it there.

Mr. OTTO: I move that the question of bringing the lady before the committee be referred back to the steering committee for further consideration.

Mr. BALDWIN: I would think so in view of what has been said.

The CHAIRMAN: All right. Are there any other witnesses anyone would like to consider? If there is no other discussion the meeting now stands adjourned until next Tuesday at 9.30 a.m.

HOUSE OF COMMONS
First Session—Twenty-sixth Parliament
1963

SPECIAL COMMITTEE
ON
FOOD AND DRUGS

Chairman: Mr. HARRY HARLEY

MINUTES OF PROCEEDINGS AND EVIDENCE

No. 12

TUESDAY, NOVEMBER 19, 1963

WITNESS:

Dr. J. M. Coon, Ph.D., M.D., Professor and Head of the Department of Pharmacology, The Jefferson Medical College of Philadelphia, Philadelphia, U.S.A.

ROGER DUHAMEL, F.R.S.C.
QUEEN'S PRINTER AND CONTROLLER OF STATIONERY
OTTAWA, 1963

SPECIAL COMMITTEE ON FOOD AND DRUGS

Chairman: Mr. Harry Harley

Vice-Chairman: Mr. Rodger Mitchell

and Messrs.

Armstrong,
Asselin (*Richmond-
Wolfe*),
Baldwin,
Cashin,
Casselman, Mrs.,
Côté (*Longueuil*),
Enns,

Fairweather,
Gauthier,
Gelber,
Howe (*Hamilton South*),
Jorgenson,
Macaluso,
Marcoux,
Nesbitt,

Orlikow,
Otto,
Pennell,
Roxburgh,
Rynard,
Whelan,
Willoughby.—24.

(Quorum 10)

Gabrielle Savard,
Clerk of the Committee.

MINUTES OF PROCEEDINGS

TUESDAY, November 19, 1963.
(13)

The Special Committee on Food and Drugs met at 9:40 a.m. this day. The Chairman, Mr. Harry C. Harley, presiding.

Members present: Messrs. Armstrong, Baldwin, Côté (*Longueuil*), Enns, Gelber, Harley, Mitchell, Nesbitt, Otto, Roxburgh, Rynard, Whelan, Willoughby,—(13).

In attendance: Dr. J. M. Coon, Ph.D., M.D., Professor and Head of the Department of Pharmacology, The Jefferson Medical College of Philadelphia, Philadelphia, U.S.A.

The Chairman opened the meeting and presented the third report of the Subcommittee on Agenda and Procedure as follows:

The Subcommittee recommends:

1. That Miss Rachel Carson be invited to appear before the Committee in the first week of December;
2. That Mr. Curran, of the Legal Branch of the Department of National Health and Welfare be called on the 28th of November together with the officials of the Food and Drug Directorate;
3. That notwithstanding the resolutions passed by the Committee on August 1st and October 15th, the quorum be set at 8 members.

Items 1 and 2 were adopted unanimously.

Some discussion arose about the third recommendation. Mr. Baldwin, seconded by Mr. Enns, moved that it be concurred in. It was resolved to reduce the quorum from 10 to 8, on the following division: YEAS: 7; NAYS: 3.

The Chairman introduced Dr. Coon and apologized to him for having taken a few minutes of his time for procedural matters.

Dr. Coon read a prepared statement dealing with the relation of pesticides to human health, and protection of food from contamination by insecticides and pesticides.

Thereafter he was questioned on the overuse and persistence of pesticides, the intake and storing of residues in the human body, adaptation and resistance to pesticides, and related matters. Questions were also directed to the witness about the persistence and reactions of DDT and the degree of its toxicity in comparison with some other compounds.

At the request of the Chairman, Dr. Coon outlined the amount of research being done in the United States on the problem of insecticides and pesticides.

The Committee agreed that Dr. Coon's opening remarks be duplicated immediately and copies sent to the members as soon as available.

Questioning being concluded, on behalf of the Committee the Chairman thanked the witness for his appearance, and at 11:10 a.m. the Committee adjourned until 9:30 a.m. Thursday, November 21st.

Gabrielle Savard,
Clerk of the Committee.

EVIDENCE

TUESDAY, November 19, 1963.

The CHAIRMAN: Gentlemen, we have a quorum.

Perhaps we might very briefly consider the report of the subcommittee on agenda and procedure. The subcommittee recommends as follows:

1. That Miss Rachel Carson be invited to appear before the committee in the first week of December;
2. That Mr. Curran, of the legal branch of the Department of National Health and Welfare be called on the 28th day of November together with the officials of the food and drug directorate;
3. That notwithstanding the resolutions passed by the committee on August 1 and October 15, the quorum be set at eight members.

Is there any discussion on this report? If there is no discussion, would someone like to move the adoption of the report of the subcommittee on agenda and procedure?

Mr. ROXBURGH: Had we reduced our quorum we would have been at work earlier than we are.

Mr. WHELAN: If this committee gets down to a ridiculous size, then it should not meet at all.

The CHAIRMAN: As you know, the problem is that many committees are meeting at the same time.

Mr. ROXBURGH: In the meantime we are holding up these people whom we do not wish to hold up. Perhaps we should change our time of meeting, or do something.

Mr. RYNARD: I think the whole problem is in the way the committees are arranged. I, for instance, have to go to another committee meeting at 10 o'clock this morning. I think you will agree that if we have an important witness we should not have only six or seven members to hear him. Surely if we are to bring a witness all the way from Washington or somewhere else, the attendance should be a little higher.

The CHAIRMAN: There was a meeting held yesterday attended by the chairman of all the committees. This was for the purpose of discussing this problem. We are to have another meeting next week in the hope of straightening out this problem.

We will take the recommendations of the subcommittee on agenda and procedure one at a time.

The first recommendation is that Miss Rachel Carson be invited to appear before the committee in the first week of December.

Mr. ENNS: What is the purpose in asking Miss Carson to appear?

The CHAIRMAN: I think the feeling of the steering committee is that she be heard so that she might discuss the material which went into her book, and not really the book itself. Is there any further discussion in this regard? All those in agreement?

Recommendation agreed to.

The CHAIRMAN: The second recommendation is that Mr. Curran, of the legal branch of the Department of National Health and Welfare be called. This

particularly is in view of the matter of jurisdiction between the federal and provincial governments in respect of many of the problems we have discussed. We are hoping that Mr. Curran will be able to come on the same day that you appear, Dr. Morrell.

Recommendation agreed to.

The CHAIRMAN: The last recommendation is that the quorum be set at eight members.

Mr. BALDWIN: May I speak to that? I agree with what has been said by some persons, that it is not very good to have a small committee of eight persons hear some witnesses. However, my experience over a few years of attending committees is that usually we wind up having a fairly good attendance, but it is the first half hour or so when it is difficult to get members to come in order to get the proceedings under way. I know this is not a sound reason, but if the reason for doing this is in order to get enough people to come so that the briefs may be read and the material put on the record, then I would be in favour of this particular recommendation. I said there are shortcomings in regard to it.

Mr. ENNS: Perhaps I too have been guilty of being late. I agree that we should go along with the recommendation of the steering committee from the practical end of things, rather than from the strength of the committee point of view.

The CHAIRMAN: Is there any further discussion? All those in favour of setting the quorum at eight members, please signify? Those against? I declare the motion carried seven to three.

Motion agreed to.

Now, gentlemen, first of all I must apologize to our witness for taking up a little time of the committee this morning to go into matters of administration.

We have with us as our witness this morning a guest, Dr. J. M. Coon, Professor and head of the Department of Pharmacology of Jefferson Medical College, Philadelphia. He is also chairman of the Food Protection Committee of the National Research Council of the National Academy of Science. Dr. Coon has come prepared to speak to us today particularly in relation to the protection of food from contamination by insecticides and pesticides. I now call on Dr. Coon.

Dr. J. M. COON (*Professor and Head of Department of Pharmacology, The Jefferson Medical College of Philadelphia*): Mr. Chairman and members of the committee, thank you. I appreciate being asked to come here to discuss this very important matter. But I would like to record a correction in something you said. You said that I was chairman of the Food Protection Committee. Dr. William Darby is chairman of that committee. I am chairman of one of its subcommittees, the toxicology subcommittee.

I have about four-and-one-half pages of material which I propose to read.

A necessary property of pesticides is that they be poisonous. Fortunately, by this property they have done substantially more good than harm. But the injury done is still excessive and there is much room for improvement in the use and regulation of the use of pesticides. The damage that has been done relates essentially (a) to fish and wildlife—and I believe the previous discussions of your committee have dealt with those problems—and (b) to accidental poisoning of people. By accidental poisoning I mean poisoning resulting from contact with or the misuse or improper handling of pesticides, either intentionally or out of ignorance or carelessness. Accidental poisoning in this sense cannot be held as an indictment of pesticides but of human behaviour, of the order of walking in front of a moving automobile or leaving aspirin sitting around the house where children can get hold of it. The approach to such

problems of accidental poisoning, basically, is not a toxicological one, except perhaps in connection with the development of methods of treating poisoning by pesticides.

It is a matter of public education, and perhaps some regulation of the availability of pesticides, or using better psychology in labeling pesticides. For example, instead of the statement on the label "harmless when used according to instructions", the label might read "harmful *unless* used according to instructions". I understand that some new labeling requirements for pesticides are now being imposed in the United States to provide better protection for the consumer and the general public.

But as far as human health is concerned in relation to pesticides there is in many people's minds a much bigger problem than that of accidental poisoning. This problem looms bigger in some people's minds than in others, but I have the impression that the more one knows about toxicology the smaller it looms. However, the main question involved in this problem cannot be answered by the best informed toxicologist. That is the question of the possible effects of pesticide residues consumed with the food for a life time. Is the population being slowly poisoned? Is there some insidious unrecognized toxic action? Will cancer develop in large numbers of people, or has it developed already from eating pesticides? Is there another thalidomide episode lurking among our pesticides?

It is likely that many people have ingested D.D.T., for example, for as long as 15 years, though we are not aware of any deleterious effect. But, fifteen years is not a life time of a human being and, furthermore, in testing pesticides on animals, we are not certain that the life times of the rat, mouse, or dog are toxicologically equivalent to the life time of man. And even if we agree to assume that they are, we still do not know whether man is more sensitive or more resistant on the long term basis than any of these experimental animals. These questions cannot be answered conclusively on sound scientific grounds in the present state of our knowledge. However, on the basis of our present knowledge we can afford to be optimistic rather than pessimistic. The results of our present methods of toxicologic investigation still give us much confidence as far as the safety of man is concerned. Though much public concern has been generated by uninformed or irresponsible writers about the possibility of a relation between pesticide residues in food and the increase in the incidence of heart disease, cancer, and various diseases of unknown cause, there is still no evidence at all that implicates pesticides as a factor in the cause of such illnesses in the population.

We have been assured by a recent study of the food and drug administration that pesticide residue tolerances are not being exceeded on food in the grocery stores of the United States. These tolerances are established in the first place on the basis of extensive long term toxicity testing in different species of animals, including studies on behaviour, growth, reproduction, life span, function, tissue and cell structure. With the sum total of this information, plus knowledge of the consumption patterns of the foods involved the tolerance is set at a level far below that estimated to produce a deleterious effect. Furthermore, any pesticide which is put into use and achieves practical value in agriculture usually receives continuing attention in toxicologic investigation. Such further studies frequently include the absorption from the intestinal tract, distribution in the body, the manner of excretion, the mechanism of toxic action and the chemical changes which the pesticide undergoes in the body. Information also soon becomes available of the effects on man as the result of incidental exposure in the manufacture or operational use of the pesticide. In some cases very valuable experimental work is done with man himself as the experimental subject. As a result of such extensive studies we know

more about the pesticides in wide use today than we do about many chemicals that are naturally in the foods that we eat every day without question.

The most famous and notorious pesticide of all time is D.D.T. This insecticide fully deserves its fame but not its notoriety. It is really not very poisonous and it has not been shown to be a significant hazard to human health. Its bad reputation derives from its cumulative properties, both in the environment and in the body. It is commonly assumed by those not trained in toxicology that D.D.T. keeps on piling up in the body indefinitely as long as it continues to be ingested. This is not true. A general principle of toxicology is that with a given rate of intake of a chemical substance an equilibrium is reached between the rate of intake and the rate that the body gets rid of the substance. Thus a steady state of storage is reached and the amount in the body does not increase. This is what has happened in the case of D.D.T. Dr. Wayland Hayes, of the U.S. Public Health Service and an authority on such matters, has pointed out that human storage levels in the U.S. were no higher in 1962 than in 1950. The steady state phenomenon has also been well established experimentally in both animals and man for D.D.T. The principle applies also, of course, to the other chlorinated hydrocarbon insecticides which have cumulative properties.

Another matter on which there seems to be much one-sided thinking is the large number of different pesticides being used. It is commonly thought that this situation creates extra hazard. But on basic toxicologic considerations it can be argued that there is safety in numbers. The larger the number of different pesticides used the less likely it is that the population will be exposed to a dangerous amount of any one of them. But what about the additive small toxic effects of many pesticides taken together? To this it can be said that, though the body has a limited capacity to tolerate a single chemical substance it has an amazing capacity to adapt itself to the simultaneous intake of small amounts of many different ones. This is how the body takes care of the multitude of chemicals, many known but many more unknown, which are present in the food we eat as nature produces it. The small toxic effects of different chemicals in the body very frequently oppose each other. In relation to pesticides some very interesting and significant observations have been made recently in experimental animals. Both aldrin and chlordane, which are important chlorinated hydrocarbon insecticides, when administered in small doses for several days, provide a marked protection against the toxic action of several of the organophosphate insecticides. Furthermore, animals have been observed to develop an adaptation to a number of the organophosphate insecticides, and in the case of at least one such agent, adaptation imparts resistance to another organophosphate. Several similar protective interactions have been observed between drugs and insecticides, a matter of considerable significance in relation to the question of the possible effects of man's exposure to pesticides when he is at the same time under treatment by one or more drugs.

I have referred here to several points which support the contention that, as far as pesticide residues in foods are concerned, things appear to be under good control and we have reason to be optimistic about the future. However, we still have to contend with the uncertainties in the extrapolation of toxicologic data from experimental animals to man. We still have the unanswered, and at present unanswerable, questions of the type I enumerated earlier. Future research and experience may answer them. Or in the meantime some of these questions may become less urgent, or even disappear unanswered, as pesticides selectively more toxic to the pest and non-toxic to man and animals are discovered, or as non-chemical methods of pest control are developed and exploited. We can expect an evolution in methods of pest control, though what will evolve, and how soon, are two more unknowns. But as long as chemical pesticides are used in large quantities everything possible should be done to minimize, or better abolish, the known or suspected hazards.

The CHAIRMAN: Thank you very much Dr. Coon.

Mr. OTTO: Dr. Coon, I wonder whether you could tell this committee if you know what percentage of professional users of pesticides, and I am speaking of farmers and foresters, as well as others, overuse pesticides? Do you know that percentage from facts or figures in your possession? We would normally expect professional people to use these pesticides as directed, but humans being what they are, there will be some overuse.

Mr. COON: I cannot answer that question with any specific figure or even estimate. Certainly there is some overuse. In California, especially, I believe there are reports indicating a larger number of cases of poisoning which are referable to operational use of pesticides. Have I touched upon the principle to which you have referred?

Mr. OTTO: Yes.

Mr. COON: You are referring to the poisoning of workers rather than the residues in excess of the tolerance levels, is that right?

Mr. OTTO: I am thinking of residues in agricultural produce which an individual is attempting to protect. Some human beings like liquor and feel that since a little bit is good, a little more is better. What percentage of farmers, for example, would take a similar attitude in respect of the use of pesticides regardless of the training they have received? Can you tell us the percentage of pesticides overused, especially of the persistent type?

Mr. COON: I have the impression that there is very little of this happening. I arrive at this conclusion as a result of the fact that there is very little found in the form of residues which is in excess of established tolerances. There are reports in this respect from the south, and this situation was commented upon in the president's science advisory committee report on pesticides. It stated that three per cent of the fruits and vegetables picked up in markets—and I believe this referred to such produce which had not been shipped in interstate commerce—did have residues in excess of the tolerance levels, though not far in excess.

Mr. OTTO: Dr. Coon, I have been recently reading about a breakthrough in the persistent detergent fields which have been creating a problem in the past. I understand there is now being produced a detergent which is not persistent. This is done by some chemical process. Do you know of any investigation in this field, or whether that principle whatever it is, can be applied to the persistent pesticide problem? Are you aware of this new breakthrough in the detergent field?

Mr. COON: I have seen something of this in the newspapers. I have probably read less about this than you have read, but I have been aware of it, yes. I am not familiar with the basic chemistry involved, nor do I know whether it can be applied to the problem you have raised in respect of pesticides. Personally, if we continue to use chemical pesticides any progress that can be made might very well be in the direction of locating chemical agents which will poison insects but will be much less toxic to animals, including man. Of course, some progress along this line already has been made. A number of the organophosphate insecticides have relatively low toxicity in animals compared with insects.

Mr. OTTO: Has anyone explained to the committee very basically and in such a way that we can all understand what makes a pesticide persistent? What is the chemical breakdown that makes a pesticide persistent?

Mr. Chairman, do you know if this has ever been explained to the committee?

The CHAIRMAN: Not to my knowledge, Mr. Otto.

Mr. OTTO: Dr. Coon, could you state to this committee in a very simple way the difference between persistent pesticides and non-persistent pesticides? As you know, we are concerned more with the persistence of substances such as D.D.T. Would you be able to put this very simply to us, Dr. Coon?

Mr. COON: I think so. A persistent insecticide is one that does not change chemically; it remains, chemically speaking, in the same form for a long period of time under a wide variety of weather, temperature and humidity conditions and so forth. The D.D.T. remains as D.D.T.

A non-persistent pesticide is one that is broken down by temperature or other weather influences such as moisture, rain and so on, into chemical parts that are of no significance, toxicologically speaking. Now, occasionally a pesticide will be changed chemically and it will become more poisonous as a result of such changes, but this is not as common by any means as the changes which will detoxify the pesticide.

Mr. OTTO: In other words there is the same problem with these persistent pesticides as there is in the case of detergents. As you know, the chemical properties of detergents did not or do not up to this moment change but remain as persistent detergents, no matter where they are used, how or for what period of time. Assuming that they will be successful in changing the chemical composition to make detergents no longer persistent, would you say there is also a chance within the next ten years or so of developing as good a pesticide as D.D.T., we will say, but which is not persistent.

Mr. COON: Yes, I think there is a good possibility of this happening. In fact, a number of the other chlorinated hydrocarbon insecticides we already have are much less persistent than is D.D.T.

I dwelt on D.D.T. in my earlier comments because of its reputation as an outstandingly persistent agent. I believe it might be said that D.D.T. is the most persistent of the pesticides which are in wide use at the present time.

Mr. OTTO: Thank you very much, Dr. Coon.

Mr. WHELAN: Mr. Otto directed one question to Dr. Coon which I do not believe I understood exactly.

Dr. Coon, would you care to say who you think is the worst offender in the misuse of pesticides and insecticides? Do you think it would be the agricultural people or those who spray parks and that sort of thing? I am now speaking of D.D.T. In which case do you think the chance of human contamination would be worse.

Mr. COON: Spraying agricultural food crops is one way in which there is hazard to human beings from the standpoint of pesticide residue. There is some operational hazard. However, D.D.T. is not as strong an operational hazard as many other pesticides we have because of its relatively low toxicity compared with many others. It does not readily absorb through the skin unless it is in solution. Many of the other chlorinated hydrocarbons are much more readily absorbed through the skin, and this is an additional avenue through which toxic effects can take place.

Mr. WHELAN: As you know, some of our parks people object to using D.D.T. for mosquito control because it is supposed to have a toxic effect, and stays in the area. Is this so?

Mr. COON: I cannot think of any reason why D.D.T. would affect the human population any more by that manner of use than by the agricultural operational use.

Mr. WHELAN: I have another question, although it may be a wee bit off the subject. Would you say that mineral deficiencies in our soil would result in much more harm? I am referring to our crops and foodstuffs which are

produced and which may carry residues from the use of some of these pesticides and herbicides.

Mr. COON: I cannot elaborate on that question. You were referring to mineral deficiencies in the soil, were you not?

Mr. WHELAN: Yes, and the crops produced from that soil. For example, I am thinking of cattle pasturing on that land, eating the grass and hay which have been grown on these soils and which are lacking in these mineral constituents. I have read several articles in this connection and these articles have pointed out that this is more dangerous than a lot of people realize.

Mr. COON: I believe you are referring to the selenium deficiency in the soil in the northwest.

Mr. WHELAN: Yes.

Mr. COON: Yes, this is one case I can think of. I cannot think of any others. There has been some trouble in the midwest from selenium deficiency in grazing cattle.

Mr. WHELAN: It has been maintained that some of our fertilizers—and I am thinking particularly of lime—will contain a high lead residue. This goes into the soil. I may say that some lines of fertilizer do not contain this. It is my understanding that if some action is not taken to counteract this problem it could lead to an over amount of this chemical in the produce which is produced. They say it can cause cancer. As I say, several articles have appeared on this subject. As you know, most professional people condemn us amateurs for reading this material. You will recall there was an article which appeared in *Reader's Digest*.

I did not like what Mr. Otto said when he referred to the farmers using these insecticides like some alcoholics use alcohol. It is my feeling that most agriculturists try to reach the ultimate in perfection in connection with the use of these materials. As I say, we are more alarmed in respect of the mineral deficiencies in the crops which are being produced. We do not have proper testing facilities to test for traces of these things in the plants or the soils which produce them. Does the same apply in the United States?

Mr. COON: This is quite outside of my field; I know very little about mineral deficiencies in the soil which might give rise to mineral deficiencies in plants. Actually, from the standpoint of quality of foods I have not become aware of mineral deficiencies in foods that are grown in the soils in the United States.

Mr. ENNS: I was interested in a comment the doctor made about the capacity of the human body to find an equilibrium by secreting or rejecting the surplus D.D.T. which might be absorbed and, in a way, your general statement did include pesticides. Yours was an optimistic view that things were not as bad as reported by some writers.

Could I ask this question: is there a deterioration of the contents which make up a pesticide such as D.D.T., in the human body? If the intake is reduced or completely eliminated will we always have the D.D.T. we took in, let us say?

Mr. COON: When the intake of D.D.T. or any of the other so-called accumulative pesticides is stopped, then what has been stored in the body begins to be excreted. It is quite slowly excreted and more slowly in the case of D.D.T. than in the case of many other materials. Now, actually I am not aware of how long it takes for a good load of stored D.D.T. to disappear from the body.

D.D.T. stored in the body does change chemically within the body. There are two other forms which still have some toxicity but these tend to be excreted

also. I would estimate that a heavy load of D.D.T. in the body might take longer than a year to disappear from the body.

Mr. ENNS: We heard from a previous witness that in areas where malaria is being controlled the operators who are applying D.D.T. over such areas of the world under WHO would have something up to 200 parts per million of D.D.T. in their food and they have been left without any ill effects. They were considered to be in good health. You have stated in your general report that we have not that much to fear from some of these residues which we absorb. Do you feel there is sufficient knowledge at this time to know how long we can continue tolerating these?

Mr. COON: No. I made the point in my comments earlier that this is one of the unknowns. It is not known how long a man can tolerate, say, 200 parts per million of D.D.T. in his fat throughout a lifetime. We do have other observations in addition to the one you mentioned. Dr. Hayes, in his writings, brings up some of these figures, namely that D.D.T. formulators frequently have as much as 600 parts per million in their fat and they have done this for as long as five years or so without any evidence of deleterious effects. Experimental work on monkeys have shown that monkeys fed 200 parts per million D.D.T. in their diet for $7\frac{1}{2}$ years showed no deleterious effects.

Now, it is pretty well agreed by toxicologists that man is probably quite a bit more sensitive than a number of experimental animals, although how much more sensitive on this long term basis we cannot answer.

Mr. ENNS: For example, how long does it take before D.D.T. deteriorates in the soil or, if it is sprayed, how long does it stay there? Does it ever disintegrate or deteriorate?

Mr. COON: The evidence supports the fact that a certain amount of D.D.T. will remain as D.D.T. under normal weather conditions for years. Now, this is another unknown; I do not think it can be said just how long a given molecule of D.D.T. might remain in that form under the normal variety of weather conditions we get in this region.

Mr. ENNS: If rain washes these substances into the soil and it is drained to a stream will this happen year after year if there is no further spraying, or is it possible that it will be lodged?

Mr. COON: It might be all leached out in a given area. A certain amount would certainly seep down deep into the soil, where it might lodge and remain there; whereas the rest could very well be washed into the streams and, eventually, a given area of soil could be clear of D.D.T. Again, I am speaking here in an attempt just to be logical. The experimental and analytical work that has been done will not give us clear answers to all those questions.

The CHAIRMAN: Mr. Rynard, have you a question?

Mr. RYNARD: Mr. Chairman, I would like to ask Dr. Coon, this question. In view of what has been said and in view of the inherent danger in spraying and operating along the lines of what has been expressed here this morning I am wondering if he would think that the operators doing this work should be licensed in order that we may know what they are doing right across the country.

Mr. COON: Well, it would be my opinion—and I would like you to take a look at that word “witness”; I am not an expert witness along these lines and I am not here to testify on laws relating to pesticides—there should be more regulations concerning the use of pesticides. I believe I did mention in my comment here labelling as well as further restrictions concerning the availability of pesticides.

Mr. RYNARD: In other words, it is your feeling that there ought to be more controls than we have at the present time.

Mr. COON: That would be my opinion, yes; and, to give a more direct answer to your question, my opinion would be that operators who are making a living out of spraying pesticides should be licensed.

Mr. RYNARD: I have another question I would like to ask at this point. I do not know whether or not there has been any work done on this or not. Do you know whether too much use of D.D.T. would result in any reaction on the bacteria or on the virus, or if it tends to kill bacteria or virus.

Mr. COON: No. D.D.T. never has established any reputation as an anti-bacterial agent or as an antiviral agent. It is used in medicine for certain pests that infest the surface of the body, and it can be sprayed all over the body in a 10 per cent mixture of a powder without injuring the individual.

Mr. RYNARD: I would like to ask if pharmacologists have been able to work out antidotes to all the insecticides or pesticides being used at the present time?

Mr. COON: No; there is plenty of room for further development in this area. The organophosphate insecticides do have specific remedies; however, they still will not antagonize very large lethal doses of organophosphates. They save many lives, but if the dose of the organophosphate is large enough then they are not effective. In the case of the chlorinated hydrocarbons, we have now what we call specific antidotes. Poisoning by chlorinated hydrocarbons has to be treated systemically; that is, if there are convulsions drugs which depress the central nervous system will be used to offset the involuntary effects.

Mr. RYNARD: Are all the hospitals in your area alert to the antidote or the systemic treatment?

Mr. COON: I believe so, yes.

Mr. RYNARD: You were mentioning that if the intake of D.D.T. into the system was high enough it could be considered a problem. I was wondering what would happen to a person who has to lose weight for some reason or another; is there a danger point there because of the fact it is stored in the fat?

Mr. COON: Yes, there have been cases reported in which there has been a load of chlorinated hydrocarbons. I believe D.D.T. has been implicated here and, perhaps, dieldrin, although I am not sure of that. When stored in the fat, and then when the individual perhaps goes on a diet to reduce weight the pesticide is liberated and causes systemic poisoning. There have been cases reported on this.

Mr. RYNARD: Therefore, perhaps there should be some warning issued so that the levels are not permitted to get up too high. This would be a precaution taken against future problems. Would you agree with that?

Mr. COON: Yes, or the recommendation to keep up your weight.

Mr. BALDWIN: Someone should send word, to Dr. Chaput.

The CHAIRMAN: Have you a question, Mr. Nesbitt?

Mr. NESBITT: Mr. Chairman, I think most of the questions I had in mind were pretty well put by Dr. Rynard. However, there are one or two more points I would like to cover. We are engaged in this committee in trying to find some practical means to overcome the misuse of these insecticides and pesticides. I was wondering if you might agree or disagree with the following suggestion, that those substances which are used in the home and which contain substances of extreme toxicity such as nicotine acid, dieldrin and all the others should be properly labelled and that the warnings should be extremely well displayed on the containers which contain these substances. Could you offer any additional suggestion in this connection?

Mr. COON: I certainly would agree that everything possible should be done to label these dangerous substances in such a way as to convince the user that it is a hazardous substance and to convince him of the desirability of following the instructions to the last detail.

Mr. NESBITT: It has been mentioned several times at other meetings as well as this one that perhaps operators or persons who make their living by commercial spraying should be required to have some form of licence. I think perhaps the word "licensing" often implies a mere payment of fees, so to speak, and a mere registration. But, from the experience which you have gained in your country and from what you know do you think it might be advisable if these operators were also required to take some sort of course in the use of these substances and to pass at least some sort of examination before they could require a licence?

Mr. COON: I think it would be highly desirable that there should be some licensing examination, yes.

Mr. ROXBURGH: Earlier in your report you mentioned that a great deal was known about the effect of these pesticides on food and the food tolerants in each case, and so on. However, you made a statement that there were other chemicals which possibly were just as poisonous and about which we know very little; what are these chemicals and what did you have in mind when you made that remark?

Mr. COON: Well, just those that we know something about; there are as many as 80. This implies that there must be others that we do not know anything about. Those we do know about include such things as the goitre producing substances that are commonly present in cabbage and other leafy vegetables; the cyanide producing glycosides that are present in quite a number of vegetables, lima beans being one, and in the seeds of peaches, apricots, apples and many other fruits. There is oxalic acid in spinach and rhubarb. It is present in a quantity that would never be considered, say, as an additive to a food. Oxalic acid is quite a toxic material and, as I say, it is present in spinach at such a level that if people ate spinach three times a day it would be deleterious.

Mr. ROXBURGH: We had better not tell the spinach people that. If I might say so, we have been giving our poor old friend, D.D.T., an awful going over here, and yet we have an insecticide known as lead arsenate, which is one of the old standbys. The question has been asked how long D.D.T. will remain in the soil. Could you advise how lead arsenate compares in toxicity with D.D.T. as it affects the human being, which is what we are interested in, as well as animal life.

Mr. COON: I would consider lead arsenate and any of the other arsenical preparations—and of course there are quite a few of them used as pesticides—of much greater importance toxicologically than D.D.T., certainly, as far as the human being is concerned. There are still many more poison cases arising out of the arsenicals than out of D.D.T., and I believe one could say that there are many more poison cases arising out of the arsenicals than all the chlorinated hydrocarbons combined.

Mr. ROXBURGH: Then, as compared with D.D.T., what effect will it then have on the soil and, as a result, on the future population?

Mr. COON: Well, I would say if D.D.T. had not been developed to stimulate the development of many other chlorinated hydrocarbons then the arsenicals undoubtedly would have continued to be used to a much greater extent and it would give more trouble as a result of that than we now have.

Mr. ROXBURGH: Is not one of the great causes of cancer, lead?

Mr. COON: Lead?

Mr. ROXBURGH: Yes. For example, there have been experiments carried out in this connection in southern and northern Carolina in respect of the tobacco situation and in regard to tobacco and smoke causing cancer, and it has been proven that the lead in the tobacco has been one of the causes. For example, down there they have 42 to 50 parts per million of lead in the tobacco that is used in cigarettes in that part of the country and yet the tobacco in Canada is one part per million. I think our government regulation is five parts per million. What I am getting at is this: would not lead as compared with D.D.T. not only through tobacco but the vegetables that are used, play a fairly large part in the cause of cancer through the use of food that has had lead arsenic applications—and I am thinking of cabbage or anything else that this preparation is used on.

Mr. COON: I was not aware of this implication in respect of lead producing cancer.

Mr. ROXBURGH: Well, it has been written up fairly well in the press.

Mr. COON: According to my information, arsenic has a worse reputation as a potential carcinogen than lead. However, there may have been some recent developments of which I am not aware. If that is true what you suggest as a possibility may very well be.

Mr. ROXBURGH: There was quite a write-up in the press about arsenate of lead. Tests were conducted and straight facts were given. It was a proven test; it was not a matter of guessing. It pointed out that was one of the causes. I do recall this appearing in the paper yesterday or the day before but, as I say, there have been many small articles on soil micro-organisms and lead arsenic in the soil which are eventually taken up in the plant, causing cancer or a number of other things.

Mr. COON: I saw a recent report that lead acetate ingested into rats and mice produced malignant changes.

The CHAIRMAN: Have you a question, Mr. Mitchell?

Mr. MITCHELL: I would like to ask Mr. Coon two or three questions. In your statement to us I think you suggested that there was no harm caused by the use of D.D.T. in humans through ingestion of pesticide residues, including D.D.T. You also included some other insecticides and said, as far as you knew, the amount taken in by the human system has not been harmful to date.

Mr. COON: I would include all pesticides in this category; that is, none of them yet have proved to be injurious to human beings through the ingestion of residues on foods. Perhaps I should not make this such an outright bald statement because, in reading over the proceedings of these meetings previously, I recall the girl who went on a reducing diet and had nothing but apples which had been sprayed with arsenic, and she came down with a good case of arsenic poisoning. Of course, that was a pesticide residue, and she was injured by that residue. But, as we said before, there should be no harm if the tolerance levels are not being exceeded to any significant extent, and even if they are exceeded quite substantially they are so low in the first place that pesticide residues from that standpoint are not causing injury to the human population.

Mr. MITCHELL: Well, you have just answered what I was going to ask next. Have you any proof, say, through autopsies or otherwise, that the human system is building up a tolerance to pesticides? Have you any proof that that is the case?

Mr. COON: No, we cannot yet make the statement that there is any evidence of an adaptation or a tolerance being built up in human beings to pesticides.

Mr. ENNS: Yet, you say there have been no ill effects from this, so in a way there is a tolerance is there not?

Mr. COONS: What I meant to say was that there was no evidence of an increasing resistance to pesticides. We have our inborn resistance in the first place, and there is no evidence this is increasing as a result of our past exposures to pesticides. Is that not the point you were referring to?

Mr. MITCHELL: Yes. You mentioned that treatment by other drugs for various human ailments so far has not caused any chemical readjustment in the system by treatment for another ailment. What I am getting at is this: there is no collision, shall we say, between antibiotics, as far as you know, with the result that other harmful chemicals would be formed in combination with pesticide ingestion.

Mr. COON: So far we cannot make a very conclusive statement along this line. I did refer in my earlier comments to a number of cases in which experimental animals have shown that the administration of a drug of the type that is used in the treatment of disease will infer a resistance against some of the pesticides.

Mr. MITCHELL: I was not thinking of that.

Mr. COON: This is, however, some experimental work that is just coming to our knowledge at the present time and there has not been very much work yet on the toxicologic interaction between drugs and pesticides. This is an experimental area in which much more work should be done, and should be done soon.

Mr. MITCHELL: I have a final question. In your answers to previous questions you have mentioned licensing of users of these agricultural sprays and so forth. You have said that they should have a licence and you have even indicated that they should have a form of education which would qualify them for this work. A previous witness here suggested that licensed retail outlets of household type compounds could explain the harmful effects of these products which are on the market. Would you agree that could be controlled along with licensing? In other words, the witness of whom I am thinking suggested that these products should not be displayed and should not be picked off supermarket shelves, shall we say, to the extent that they are being displayed now in places where the only person the buyer sees is the check-out cashier, who has no knowledge of the poisonous additives in the product being paid for.

Mr. COON: I think it is going rather far to license the retail outlets of these garden bombs, as you might call them. The approach to this problem I think should be adequate labelling and warnings and, in the future, development of garden pesticides which are adequate for that type of use but are not hazardous to the human being and his pets.

Mr. MITCHELL: That is all I have to ask, Mr. Chairman.

Mr. CÔTÉ (*Longueuil*): Is the danger greater for the person who uses the pesticide spray or for the consumer who eats foods which are contaminated by residues?

Mr. COON: I have seen many more reports of injury on the operational side, that is to say to people who are manufacturing and dealing with the formulation processes of pesticide sprays and to farm workers who go into fields or orchards which have been sprayed. These areas are the ones in which human beings become affected. I am not aware of any cases of poisoning in human beings as a result of pesticide residues on foods that are taken up by the consumer from the open market.

Mr. CÔTÉ (*Longueuil*): Through building a higher tolerance in the human body, you think there is a possibility that the human body can become immunized against the bad effects of pesticides?

Mr. COON: In experimental animals we have some evidence that there is an adaptation. I would not like to call it an immunization. There is an adaptation to the effect of quite a number of the organophosphate insecticides. We have not yet seen any evidence of this with the chlorinated hydrocarbons. I mentioned in my earlier comments, however, that some of the chlorinated hydrocarbons such as aldrein will infer a greater tolerance in experimental animals to some of the organophosphate insecticides. That is an antagonistic interaction.

Mr. CÔTÉ (*Longueuil*): Is there a change in the residue when food such as vegetables or meat which contain residues are boiled or cooked? Is the residue the same when it is cooked as when it is raw? Does cooking bring about any change in the residue?

Mr. COON: That would depend on which pesticide is involved. D.D.T., being as stable and persistent as it is, would resist cooking procedures, I believe. Most of the organophosphates, however, I do not believe would.

Mr. ROXBURGH: May I come to spinach again? If a person were to go on a diet of spinach, eating it at every meal, three times a day, what would be the final result? The only reason I am asking this is that goitre and so on were mentioned. Is the result the same as the result of eating too many fats and too much cholesterol? What does eating too much spinach do?

Mr. COON: Experimental work in rats has shown that if the diet contains 10 per cent of spinach the effect on the rat is kidney damage and a lowering of the blood calcium to an extent where hypocalcæmic tetany results. There is no reason to believe there would be any difference in human beings. Just what percentage in the diet would bring about this result we do not know. There have been reports, however, of injury by rhubarb leaves which were recommended during the war in Europe as a substitute for spinach. Fairly soon, quite a number of cases of oxalic acid poisoning occurred. This was primarily kidney injury. The recommendation, of course, was rescinded.

Mr. RYNARD: Mr. Chairman, can Dr. Coon tell us what experiments have been carried out and what are the effects on fertility of the human race, or even animals, from the use of pesticides.

Mr. COON: This is another area which requires experimental work. There has been very little done in that regard with pesticides. I believe there have been a few experimental studies on a sequence of two or three generations of mice or rats. I could not say now just which agents were involved here, but there is considerable thinking now in favour of more work of this type. Also, this was one of the recommendations of the President's science advisory committee in its report on pesticides.

The CHAIRMAN: Are there any other questions, gentlemen?

May I be allowed to ask Dr. Coon a question? Can you give the committee some idea of the amount of research that is being done in the United States, at government level or university level, in regard to the problems of insecticides and pesticides?

Mr. COON: There is quite an amount being done but there should be more. About six years ago the United States public health service at the National Institute of Health in Washington formed a new study section, the toxicology study section, for the purpose of encouraging more work of this type. This encouragement, of course, extended not only to pesticides but to environmental poisons of all kinds; and I am sure you recognize that pesticides constitute only a part of the chemical environmental hazards to which man is exposed.

The toxicology study section reviews research applications for grants of money to support investigations, and since I have been a member of that study section since it started I have become aware of the tremendous variety and scope of the work that is actually being done. However, the variety and scope of the environmental hazards that are involved exceeds the scope of the work that is being done. So this is an area in which governments probably should try to make more money available and universities should try to build up and develop to a larger extent their work in these areas.

The agricultural experiment stations throughout the nation are, I believe, mostly involved in pesticide projects and agricultural chemicals of other types.

Is that an adequate answer?

The CHAIRMAN: Thank you.

Mr. NESBITT: I realize Dr. Coon's statement will appear in the minutes of the meeting, but if Dr. Coon has some additional copies it would be helpful to the committee to have these circulated.

The CHAIRMAN: If it is the wish of the committee I will have Dr. Coon's original copied and I will send these copies to members of the committee this afternoon.

Mr. NESBITT: Thank you.

Mr. WILLOUGHBY: What coordination is there in Washington between the different departments in the study of pesticides and insecticides? Are the different departments working separately or are they working as one over-all central group?

Mr. COON: The department of agriculture and the food and drug administration work together from the standpoint of setting tolerances. The department of agriculture, as far as I know, does not do toxicological work on animals. Their experimental laboratories are more concerned possibly with the effectiveness of pesticides in their use as pesticides. Are they actually effective in the use for which they are recommended by the producer of the chemical is the actual concern of the department of agriculture.

Mr. WILLOUGHBY: I was thinking more of the toxic effects of these drugs on human beings.

Mr. COON: The food and drug administration, of course, is the foremost government agency that has to do with the toxicology of pesticides. The national institute of health, in the sense that I mentioned a little while ago, is encouraging work along these lines. I forgot to mention, of course, the communicable disease center at Atlanta, Georgia, which is connected with the United States public health service; they do a tremendous amount of work on the toxicology of pesticides. Dr. Wayland Hayes, who is director of their toxicology efforts, has probably been one of the foremost writers on the relationship between pesticides and human health. He probably has the best collection of human cases of poisoning by pesticides of which I know. Therefore I would say the public health service and the food and drug administration in the United States government undertake the main efforts in this area.

Mr. ROXBURGH: Do you think it would be possible to get Dr. Wayland Hayes's reports on injuries?

The CHAIRMAN: I will investigate and report back to the committee.

Mr. COON: I am not sure that he has all these compiled between two covers, but he has a tremendous amount of material and I am sure he would be glad to provide it to the committee.

The CHAIRMAN: Are there any other questions gentlemen?

If there are no other questions I would like to thank Dr. Coon on behalf of the committee for coming all the way to Ottawa, in very bad weather, from Philadelphia in order to appear before the committee this morning.

Mr. WHELAN: At the front of the book of minutes of our proceedings there is a list of the members of the committee. A druggist asked me, "What in the world are you doing on that committee? Why not put professional people on such a committee?" I do not mind whether or not you put "farmer" beside my name, but I think there should be some indication of the good people we do have on the committee. It should be known that there are some people on this committee who have good knowledge of the subject. It would be helpful to the public in general to know the qualifications of the members, because the press has not pointed out, for example, that Rodger Mitchell is a past president of the Pharmaceutical Organization or that we have such qualified people on this committee as Dr. Willoughby and several others. For example, a lot of people do not know that our chairman is a medical doctor. A lot of people do not know that we have Dr. Rynard, Dr. Howe and Dr. Marcoux on this committee, and Mr. Mitchell who is a druggist. We have people who are familiar with these products. Even Mr. Roxburgh and I claim to be agriculturalists.

The CHAIRMAN: I think we will have to leave that to the press.

Gentlemen, the meeting is adjourned until Thursday, November 21, at which time representatives of Cyanamid of Canada will be here. They have sent forward briefs in both French and English.

HOUSE OF COMMONS

First Session—Twenty-sixth Parliament

1963

SPECIAL COMMITTEE

ON

FOOD AND DRUGS

Chairman: Mr. HARRY HARLEY

MINUTES OF PROCEEDINGS AND EVIDENCE

No. 13

THURSDAY, NOVEMBER 21, 1963

WITNESSES:

Mr. S. R. Stovel, President, Cyanamid of Canada Limited; Mr. Norman J. McDonald, Assistant to the President, Cyanamid of Canada Limited, both of Montreal; Dr. George S. Cooper, Manager, Technical Services, Agricultural Department, Cyanamid of Canada Limited, Toronto; Dr. Robert White-Stevens, Assistant Director, Research, Agricultural Division, American Cyanamid Company, Princeton, New Jersey, U.S.A.; and Mr. W. S. McLeod, Supervisor, Pesticide Unit, Plant Products Division, Department of Agriculture.

ROGER DUHAMEL, F.R.S.C.
QUEEN'S PRINTER AND CONTROLLER OF STATIONERY
OTTAWA, 1963

SPECIAL COMMITTEE ON FOOD AND DRUGS

Chairman: Mr. Harry Harley

Vice-Chairman: Mr. Rodger Mitchell

and Messrs.

Armstrong,
Asselin (*Richmond-
Wolfe*),
Baldwin,
Cashin,
Casselman, Mrs.,
Côté (*Longueuil*),
Enns,

Fairweather
Gauthier,
Gelber,
Howe (*Hamilton South*),
Jorgenson,
Macaluso,
Marcoux,
Nesbitt,

Orlikow,
Otto,
Pennell,
Roxburgh,
Rynard,
Whelan,
Willoughby.—24.

(Quorum 8)

Gabrielle Savard,
Clerk of the Committee.

MINUTES OF PROCEEDINGS

THURSDAY, November 21, 1963.

(14)

The Special Committee on Food and Drugs met at 9.40 a.m. this day. The Chairman, Mr. Harry C. Harley, presided.

Members present: Messrs. Côté (*Longueuil*), Enns, Fairweather, Gelber, Harley, Howe (*Hamilton South*), Jorgenson, Macaluso, Mitchell, Otto, Rynard, Whelan, Willoughby (13).

In attendance: Representing Cyanamid of Canada Limited: Mr. S. R. Stovel, President, Mr. Norman J. McDonald, Assistant to the President; Mr. John Benet, Manager, Information Services, all of Montreal, Quebec; and Dr. George S. Cooper, Manager, Technical Services, Agricultural Department, of Toronto, Ontario.

Also in attendance: Dr. Robert White-Stevens, Assistant Director, Research, Agricultural Division, American Cyanamid Company, Princeton, New Jersey; and Mr. W. S. McLeod, Supervisor, Pesticide Unit, Plant Products Division, Department of Agriculture.

Mr. McDonald was introduced, and after outlining his background, proceeded to introduce the representatives of both Cyanamid of Canada Limited and American Cyanamid Company, giving the qualifications of each witness.

The reference paper describing the procedures followed by Cyanamid of Canada Limited in preparing a petition for Registration, for specific uses, of a Pesticide, having been distributed to the members of the Committee in advance, the members proceeded with the questioning.

Dr. Robert White-Stevens was invited to elaborate on statements made in his paper entitled "The Role of Agricultural Chemicals in Feeding and Exploding Population", which had also been distributed in advance to the members. Dr. White-Stevens dealt with agricultural science, the impact on the health of humans and animals by the use of pesticides, the increase and efficiency in agricultural production, the economical aspect of developing and marketing a compound, and the problems created by pesticide residues, and related matters.

Mr. Stovel was questioned on the work done in the interest of safety in regard to testing pesticides and insecticides manufactured by Cyanamid, and their further development.

Dr. Cooper explained the problems of labelling and antidotes. He commented on the precautionary and safety measures taken by Cyanamid Company of Canada before a pesticide is made available to the public. During the course of his statement, he circulated to the members, for their perusal, a large quantity of material covering the registration of new uses of malathion.

Mr. McLeod supplied information with respect to new chemicals registered in Canada and new claims for previously registered products.

Mr. Stovel outlined to the committee the organization and operation of Cyanamid of Canada, and the extent and financial aspect of research done by the company. He was assisted by Dr. Cooper.

After further questioning, Mr. Mitchell, the Vice-Chairman, registered a vote of thanks to Cyanamid Company for having asked to appear, and complimented the witnesses on their presentation.

Mr. Côté also expressed his appreciation to the Company for having supplied copies of the brief in French.

On motion of Mr. Otto, seconded by Mr. Rynard,

Agreed, That the paper entitled "The Role of Agricultural Chemicals in Feedings and Exploding Population", by Robert White-Stevens, and the Reference Paper describing the procedures followed by Cyanamid of Canada Limited in preparing a Petition for Registration, for specific uses, of a Pesticide, submitted to the Committee, be printed as appendices to this day's proceedings. (See Appendices "A" and "B").

At 11.15 a.m. the Committee adjourned to 9.30 a.m. Tuesday, November 26.

Gabrielle Savard,
Clerk of the Committee.

EVIDENCE

THURSDAY, November 21, 1963

The CHAIRMAN: Gentlemen, we now have a quorum.

We have with us this morning as witnesses gentlemen from Cyanamid of Canada Limited. I should like to introduce Mr. McDonald, the assistant to the president of that company, who will introduce the gentlemen who have accompanied him here this morning.

Mr. NORMAN J. McDONALD (*Assistant to the President, Cyanamid of Canada Limited*): Thank you Dr. Harley.

The CHAIRMAN: You may remain seated.

Mr. McDONALD: Thank you. I should like to say that we appreciate the opportunity of coming here, particularly if we can be of some help to the committee. That was our purpose in mentioning to you some time ago that we would be pleased to assist in any way.

My name is Norman McDonald. As Dr. Harley has told you, I have the job called the assistant to the president which covers a multitude of ills. All in this group are Canadians. I am a native of North Bay, Ontario. I was educated in the province of Ontario at North Bay and at Queen's University.

Second on my right is Mr. S. R. Stovel. To give you a little background information, Mr. Stovel was born at Sudbury, Ontario, is a graduate of Bishop's College School and McGill University with a B.Sc. He has also completed the advanced management program of the Harvard Business School. Mr. Stovel has served in many capacities with Cyanamid of Canada in both Canada and the United States and was elected president of our company on July 1 of this year.

On my immediate right is Dr. G. S. Cooper. He was born at Medicine Hat, Alberta, educated at public schools and the Normal School in Calgary. Following his service with the Canadian army, he returned to school at the University of Alberta and graduated with a bachelor of science degree in agriculture in 1949 with honours, went to the University of Alberta on a four-year scholarship. He continued his studies at the University of Alberta and obtained his Master's degree in agriculture. He won a research scholarship, and I might add it was a Cyanamid scholarship, strange as it may seem. He went to the University of Illinois and obtained his Ph.D. in 1953. Dr. Cooper joined Cyanamid of Canada that year. His interests with the company and his position of manager of educational services of our agricultural department are in the field of fertilizers, pesticides, animal feed and health as well as food products.

The gentleman with the glasses at the end of our group of witnesses is Dr. Robert White-Stevens. When you hear Dr. White-Stevens speak you will recognize the fact that he is a native of England. He was born in London and eventually took up residence in Canada. He was educated at McGill University, received a bachelor of science degree in agriculture in 1933 and a Master's degree in 1936. In 1942 he received his Ph.D. from Cornell University. He has taken an active interest in food and nutrition and joined Cyanamid's agricultural department and has continued his studies of how to feed an ever increasing world population. He is presently located at Princeton, New Jersey, where he holds the important appointment of assistant to the director of research and development for American Cyanamid's agricultural division.

Finally, the young man back in the corner is Mr. John Benet who holds the position of assistant to the assistant. John works with me.

That is our group and we will be pleased in any way to be of assistance to your committee.

The CHAIRMAN: Thank you very much Mr. McDonald. Thank you gentlemen for accompanying Mr. McDonald to this committee and for submitting your brief far enough in advance that I am sure all the members of this committee have had an opportunity of reading it.

As far as the brief is concerned and questions arising from previous discussions, would someone like to begin questioning of these witnesses?

Mr. ENNS: In the introduction to the brief it is stated that Cyanamid of Canada Limited is a subsidiary of an international corporation. Would someone explain this situation?

Mr. McDONALD: We are part of an international corporation.

Mr. S. R. STOVEL (*President, Cyanamid of Canada Limited*): The parent company is American Cyanamid. Our company is a wholly owned subsidiary of that United States company.

Mr. WILLOUGHBY: Is the investigation which is mentioned in this brochure in connection with your products an investigation that takes place in the central area of your United States organization and does it apply to the entire world, or just Canada?

Dr. GEORGE S. COOPER (*Manager, Technical Services, Agricultural Department, Cyanamid of Canada Limited*): This testing is done at Princeton, New Jersey. All our toxicological investigation is done there.

Mr. WILLOUGHBY: In other words this is a co-operative investigation for the whole industry throughout the world?

Mr. COOPER: Yes.

Mr. OTTO: Mr. Chairman, I wonder whether the members of this committee have the folder entitled "The Role of Agricultural Chemicals in Feeding an Exploding Population" written by Mr. Robert White-Stevens? The last time I asked this question some of the members had not received this folder.

The CHAIRMAN: These pamphlets were mailed to each member of the committee.

Mr. OTTO: If everyone has read this folder as carefully as I have read it I would think there would be no further need for meetings of this committee in connection with pesticides.

I should like to ask Mr. Robert White-Stevens several questions.

He commences his pamphlet by stating the Malthusian theory of population explosion. In the first portion of the brochure Mr. White-Stevens states:

...Malthus was absolutely correct. The population of the world has increased geometrically, and in spite of wars, famine and disease has done so with a surprisingly little deviation for about the last 7,000 years.

Mr. White-Stevens, you predict in this folder that Doomsday will be in the year 2026. Could you explain to the members of this committee how you arrived at that prediction and why you feel that the Malthusian theory is correct, that the population of the world has increased geometrically with surprisingly little deviation for about the last 7,000 years?

Dr. ROBERT WHITE-STEVENS: (*Assistant Director, Research, Agricultural Division, American Cyanamid Company*): Sir, I am quoting in that pamphlet some data of Foerster, Mora and Amiot, who forecasts Doomsday to be November 13, 2026. Actually of course, the best figures that we have, and

obviously they lose accuracy the further back one goes, indicate that about 1830 the world population attained one billion souls. The population reached two billion around the turn of the century or 1905, and reached three billion about the middle of the century, 1950. Today the population is approximately three billion two hundred million and increasing rapidly, at about 55 to 60 million births over deaths per year, which is close to 7,000 births over deaths per hour. In the world as a whole it seems inexorable that we will reach this population perhaps not by the year 2000, but rapidly. Obviously this, as it stands now, presages this inexorable growth, and at our present standard of living, unless we increase our foods and supplies, the result will be twofold.

As you know, more than 65 per cent of the population of the world is in a chronic state of malnutrition. We, of course, on the North American continent, are the lucky ones and have a problem of overeating. We are probably the first people in history that have ever suffered from this problem.

The evidence is that the population of the world will certainly reach this level. It is doubling in somewhere between 28 and 35 years. Malthus in his article suggests that by the year 2026 we will have a population of 10,000 people per square mile of land surface, which is equivalent I might add to the population of Manhattan Island. I do not think this will happen within the next quarter of a century, but at the present rate of increase it is inexorable and will arrive probably in the next century. Perhaps we should not concern ourselves with this problem, but it is our problem. I should say that it does not make much difference whether it happens in 2026 or 2075 but if the population of the world increases to a concentration of several times that of China we will be confronted with a very terrible problem.

Of course the clothing, feeding and sheltering of these people is the major concern of the agricultural field and of the disciplines which are integrated to resolve the problem of agriculture.

I think it is also important for us to realize that during the past number of years agricultural science chiefly in North America has advanced further than in the preceding 10,000 years, and certainly has made a mark on the important species of life. I think we will have more than doubled our agricultural scientific progress in the next ten years over what we have achieved in the last 100. I believe we will be able to do this, but it is important the agricultural science not be impeded in this endeavour, no more than medical science should be impeded.

I think I have outlined the point I was trying to make. I am not prepared to state that November 13 will be Doomsday. This is obviously a catch title that Forester, Mora and Amiot used. I do not think anyone doubts that we are confronted with a colossal problem. By the year 2000 for example we will have close to 400 million people in North America, counting Canada and the United States. This fact is virtually inexorable.

Mr. OTTO: Mr. Chairman, after reading this very well written article I must admit that the purposes of this committee in protecting wildlife, game and fish from toxic pesticides seems of small importance.

I wonder whether I may ask the president of the company or Mr. McDonald what is being done in the interests of safety in regard to testing pesticides and insecticides manufactured by this company? What percentage of your expenditures is directed toward testing in respect of safety precautions, and what percentage of your experimental budget is directed toward the developing of new and more powerful pesticides in order to increase the benefits to our agriculture economy?

Mr. STOVEL: The answer is that in broad terms we in Cyanamid of Canada are spending this year perhaps of the order of \$200,000 on these various technical ends of the pesticide area. Of this roughly about \$100,000 is spent to

support work going on at the company's main experimental station in the United States. The balance of roughly, \$100,000, is being spent in Canada on the type of thing which you would call more control, or safe use. This is done through Dr. Cooper and his staff, who provide grants for the various universities in Canada.

Mr. OTTO: You are spending about one-half of the budget on development, and one-half on protection?

Mr. STOVEL: That is right.

Mr. OTTO: By the tone of Dr. White-Steven's article, there should be about 90 per cent for development and 10 per cent for testing.

Mr. McDONALD: I think there is clarification for that.

Mr. STOVEL: I have divided the sum, with, one-half to be spent in Canada versus what was spent in the United States. Virtually all of the United States is in the developing end, and some of the Canadian is also in the developing end, so it would not be as high a figure as Dr. White-Stevens used, but rather somewhere in between.

Mr. OTTO: You have pointed out that according to certain calculations two-and-one-half acres are required per person of population in order to feed that person as compared to the present 2.8 acres of arable land that we have per person. Is there any possibility or likelihood that with the development of better pesticides and insecticides this 2.8 acres could be increased substantially, or is this going by the mountains, the waters, and so on?

Mr. WHITE-STEVENS: Well, to some extent, yes. There are great areas of the world, for example, there is the central part through Africa which is contaminated by the tsetse fly. This area is roughly 4,000,000 square miles, and is equal to the continental limits of the United States. This is virtually denied to the agricultural productivity of man by domination of the tsetse fly which produces sleeping sickness in humans. It carries the sleeping sickness to human beings. And there were areas until recently, in India, which were denied to productivity because of the dominion there of yellow fever and malaria, brought about again by mosquitoes and insects. In recent years this situation has been greatly relieved by the use of D.D.T.

However I think there is a limit to the amount of land worth cultivating, and that more of the world cannot be adequately cultivated. I think of course that we are rapidly reducing the amount of land that is needed to support one human person through one year with food, and this is being done through discoveries in agricultural science. I am sure that productivity in North America at the present time certainly could support one human being on somewhere around from one to one-and-one-quarter acres. This is the answer to the need to increase efficient production. But we would have to control all forms of pests and predators virtually completely in order to do this effectively.

In this pamphlet of mine there is a summary of what the estimated costs are. These are very hard to pinpoint. The total cost of developing a compound is in the vicinity of \$2½ million from its discovery to putting it on the market, and of this sum well over \$1,000,000 is involved in the production phase of it. So that leaves, roughly, \$1¼ million, which is pretty close to \$500,000 to \$600,000 per pound. And I think the efficacy of safety development work which you mentioned means that at least \$600,000 is involved in safety procedures. However, you have that chart in front of you now, and in the centre of the chart, down here, you will find metabolism, and that is divided into two categories, physiology and toxicology.

Physiological studies are concerned with the fate of the compound and with the levels at which it is likely to be used; that is, with the residues which

are likely to occur with constant or occasional use, with the effect of these residues, and with the question, are there any residues, and if so, what are they?

The other side of the matter is toxicology which deals with the activity of a compound at levels at least one hundredfold over what is likely to be found as residue in plant or animal use, and in human consumption. So toxicology is concerned with excessive exposure. We usually do this over two years with experiment on two mammals, usually a rat and a dog, and through two cycles of reproduction. We determine the one hundredfold effect of the residues likely to appear. We assume that a one hundredfold margin of safety is sufficient to preclude the possibility that the residues which might appear do harm the consumer after exposure. If we find that 1,000 parts per million of, let us say, "X" compound is the minimum amount which appears to be toxic, and that this was the rate after chronic exposure over two years, the maximum residue allowed under United States law would be ten parts per million of a certain product. But if it were found that a farmer could get by with an amount that would only leave one part per million, this usually assists us in determining the maximum that we will allow. But if later on it turns out that a little more is needed, that amount could come up to seven; but they usually think of 100 as a margin of safety. However this has not always been the case. This has come into practice in the last 10 to 15 years. Formerly they were a little more generous. But as occasion and knowledge expanded they have reduced it to one part as a margin of safety. That is what that is. We estimate that it costs us from \$300,000 to \$350,000 per pound.

Mr. OTTO: In our attempt to increase the availability of arable land, and to increase food production, we are concerned with two fields; one is the control of insects, parasites, and so on, through insecticides and pesticides. The other field is through more intensive training, and the possible use of fertilizers.

In which field do you think, over the next 50 years, there would be the best chance of increasing food stuff production, through the use of new fertilizers, intensive training, and more intensive farming, or through the use of better control of insects and parasites?

Mr. WHITE-STEVENS: I do not think you can put one ahead of the other. That is the reason we have been so successful in North America during the last 100 years. We have really supplied four legs to the table. The first leg is education. The primary function of the library and of research is to bring the finding of the research laboratory to the experimental farm, and out to the grower on the land so that he may put these things to work. The second is the field of biology in which I would of course include genetics, physiology, and pathology, in order to improve our plants and animal stocks so that we can get the most out of our seed, as it were. But the third leg under the table of course is agricultural engineering which has allowed us to have one man perform the work which formerly took 100 men to do. And finally, the fourth leg under the table of course is agricultural chemistry which itself may be divided into distinct areas: growth promotion in the form of favourable crops and animals, and in the form of nutrition fertilizers, so that we may get more mileage, as it were, out of our seed stock and our land; and the other aspect of agricultural chemistry can be regarded as growth suppression of undesirable pests, insects, and diseases, which attack our domestic crops and animals.

So in a nutshell, this is the concept of what agricultural science has been, and what, I think most of us would agree, it should be.

I would not want to see pesticide research done at the expense of education. To do this would be foolish. We must carry out training. There is no point to a discovery without finding out where it can be put to work. Burying it in the laboratory does not have the efficacy of carrying it out in practice. We must maintain education among our young people so that they may make use of every modern development which comes down the pipe.

I think we must maintain and conserve our land so that we will be working in the interest of the land rather than in the interest of expediency. In the past we have been free and easy with the land and we have wasted our substance for the expediency of the moment. I think this has changed in the last 20 years very effectively. We find today that farmers are more conservation minded. We find today contour farming going on, and the use of preserving cover crops against wind blowing and so on. I think we have done a magnificent job in the last 100 years, and that the results in North America have proven it. But I would not want to see any one area of science emphasized at the expense of the others. To do this would be quite fatal. Does this answer your question?

Mr. OTTO: Yes, it does. I certainly recommend very wide distribution of this article. I think this is a very good pamphlet.

Mr. WHITE-STEVENS: Thank you.

Mr. RYNARD: Mr. Chairman, I feel a little depressed sitting here and hearing this story today, because here we have an agricultural scientist on the one hand producing more and more food, while on the other hand we have my own profession, medical science, doing away with so many of the epidemics—or at least trying to do away with them, with the end in view of increasing the span of life. Surely with those two intentions coming together we have a two-legged table which is bound to collapse somewhere. Because if we keep on increasing the amount of food we can raise, and if we keep on increasing the power of medical science so that people may live longer, with healthier birth rates, then there is only one conclusion we can all come to.

So surely it is not a complete argument to say that we should produce with more and more land without first dealing with the other side of it. It leaves me quite a bit depressed listening to more and more of the story, to think that with a greater increase in food we will have more and more people to feed. Where are we going to end up with our 6 billion of population and with this rate of growth?

Mr. ENNS: I would not remain very depressed. The facts are there, and Dr. White-Stevens has said that they are now documented. But surely these are exciting things in our time. It is wonderful to think of the advancement of knowledge in our day. The way we are working is bringing about terrific improvement.

Mr. RYNARD: Are we all going to have to take a big stick to one another when we get so close together?

Mr. ENNS: Mr. Chairman, I think we are getting away from the main reason for our meeting this morning.

Mr. RYNARD: No. We are trying to do away with these pests so that we can grow more and more acres of food. But surely there will come about an impasse somewhere. I realize it is of no particular concern to the meeting this morning, but surely they must come together somewhere.

Mr. ENNS: I wonder if we are not getting outside the scope of our meeting this morning?

Mr. RYNARD: I admit that we are, but those two effects are coming together somewhere, and they are going to collide.

The CHAIRMAN: Perhaps we might return to the more basic consideration of the brief by the committee. Are there any questions brought out by the brief?

Mr. ENNS: As to the brief I was interested in the labelling costs which could be placed on the research of compounds, and with the field performance of the toxicologist. There is always the need to figure out what cost you are able to place on it. You say that this would cost from \$150,000 and so on? I

am interested in how these costs are arrived at. What do they involve? Is it the total cost of developing a compound, or is it merely the cost of your branch?

Mr. COOPER: The figures given are the total costs so far as the development of the compound is concerned. We all contribute to it. We know almost down to the last dollar what each phase of development will cost us. In toxicology you know that you must spend so many dollars, if you want to do reasonably good work, and you know what your lab costs will be. We can determine very accurately the costs of any one phase of development of a compound.

Mr. ENNS: This leads me to the next point where you say that if the promotion of a certain pesticide seems uneconomic, this would discourage it, because it would not be marketable. A conclusion to that effect is made somewhere along the line. What is the level where you may find a product to be uneconomic or economic as the case may be? Do you have a market price envisioned at the time of its research, where you will say if we can get this below a certain figure, we can sell it, or otherwise? How do you establish what is economic?

Mr. WHITE-STEVENS: Perhaps I should address myself to this problem which is a very difficult one. The costs included in this table and in the brief include of course compounds which fall by the wayside. As to investment in a compound which may turn out not to have a satisfactory margin of safety, or which may not be economic to the farmer, in determining this we use a rule of thumb, and if we find that a compound is not going to make a profit of let us say three to one, if it should cost, let us say, \$1.00 to create, then we must expect to get back \$3.00. Sometimes we can make it at one to ten. But if the costs are greater than these, it is a failure and we therefore abandon the compound.

We have had compounds which looked promising, but when we finally got them out in the field and put them to work, we found that it cost \$100 per acre per year perhaps to be effective, so we abandoned those compounds and turned our attention to compounds which would be more effective. There is always a wide margin. But in general you can say that if a compound is going to cost the farmer less than a three to one ratio, as a return to him versus his investment, it will never go.

Mr. ENNS: So there is a built-in price control?

Mr. WHITE-STEVENS: That is right. When we start out at the top of the table, it may cost as much as \$5,000 a pound at that stage of the game. But during the flow sheet, our chemical engineers work to try to find a way to produce it economically. If they can come out halfway down, then we can go along with it. But if we see that we cannot do it, it is abandoned. We are working on a compound now and the chemical engineers processing the development are striving to get it below \$13 a pound. But we do not think we should consider it unless it gets down to around \$6. Maybe we will find a way to produce this in a much cheaper manner. Thus economics follows the development of these compounds at every stage, and we use as our formula, as it were, three to one, with a view to it being of benefit to the farmer.

Mr. ENNS: This ratio is tied to the production and to the lowering of costs. But the economics of the farm crop enters into the picture too, because with an increase in the value of his crops, the farmer can afford to spend more on this kind of thing.

Mr. WHITE-STEVENS: Yes, sir.

Mr. ENNS: You alluded to the role of crop management in your statement in determining whether or not this is feasible, that is, whether it is a feasible promotion and one that would provide the farmer as well as the producer with a profit. There has to be a profit to the company as well.

Mr. WHITE-STEVENS: Yes, sir.

Mr. ENNS: Is there any trend towards reducing the cost of pesticides? It seemed apparent from other witnesses that there is a tendency for the cost of these things to come down owing to better research, or wider promotion. Is this something we can look forward to with greater efficacy or benefit?

Mr. WHITE-STEVENS: I do not think there is any question about it. The history of virtually every new agricultural chemical has been one of increased economy and the reduced price to the ultimate user. A company which invests \$2½ million in its compound hopes at least to recuperate the investment in order to satisfy its stockholders. We are continually looking for ways to reduce our own cost and to pass such reductions along to the consumer. This has been the history of virtually every chemical compound, and certainly of insecticides and pesticides.

Mr. ENNS: Is there any indication on the part of the industry of the average safety levels which governments set? You mention something like one hundredfold as a safety measure. Governments sometimes are not always convinced that these are the only guides. Sometimes they are only best estimates, because in some situations a certain tolerance level may have been reached through inadequate research. Has the industry brought about any reduction in safety levels?

Mr. COOPER: In Canada we are not impatient. We like to work with the food and drug administration. We feel that they are doing an excellent job, and we are always ready to co-operate with them and to work along with them.

Mr. ENNS: You do ascertain whether or not the levels of residues are safe?

Mr. COOPER: We feel that in Canada we have one of the best organizations in the world so far as safety of foods is concerned, and concerning residues. The industry and Cyanamid are certainly not impatient. We feel these precautions must be taken. In Canada we have one other factor as far as the marketing of compounds is concerned. We in Canada take into consideration our Canadian farm methods, and farm improvements.

In many instances we will not market a compound in Canada if we feel it would not be handled safely by the consumer. I think we are perhaps one of the few countries that pay a great deal of attention to this factor.

Mr. ENNS: We have heard from other witnesses, with some concern to ourselves, concerning the ill effects arising from improper use of a product. This is actually not a complaint against the product itself, but it concerns the mishandling of it which produces such ill effects. One of the remedies suggested by other witnesses, and one which we are thinking of ourselves, is better labelling. I wonder if the difficulty with ill effects might be corrected by something which would direct the attention better to those ill effects, and by showing what improper use of the product would involve? Have you any quarrel with this sort of thing, where we might want to insist upon an improved or different sort of labelling on the product?

Mr. COOPER: I have no quarrel with that concept, but I have some reservation. Labelling is only a part of the problem, and probably one of the smaller parts. We spend about \$100,000 or more a year on safety measures, such as publications, educational projects, meetings, and so on. A lot of the misuse that occurs cannot be corrected by labelling alone. No matter what you put on the label, how are you going to get people to read it? This is the problem. I have found that labelling can be complete and detailed, yet the individual householder will not take the time to read the label. If we could find some method through education, then the use of labels could be improved, but this is not the whole answer from my standpoint.

Mr. JORGENSEN: Do you feel that the legislation recently passed in Manitoba will contribute to or assist you in assuring that the customer uses the product properly?

Mr. COOPER: I believe it may help.

Mr. JORGENSEN: I was not referring particularly to that particular clause of the bill, but rather to the licensing of the dealer.

Mr. COOPER: Yes, but the important thing in your education system is to go to this dealer with it. The mere issuing of a licence to him is not sufficient. You must take the matter further and arrange to contact the dealer that you are licensing.

Mr. JORGENSEN: Have you read the bill?

Mr. COOPER: Yes, sir, I have read it. And this is what you are going to attempt to do.

Mr. WILLOUGHBY: I would like to ask if you would approve of a suggestion that was brought up at our last meeting that the label on these packages—instead of being in the prescribed form—carry in addition such words as “dangerous unless used as directed”? That has been suggested as a possible addition to the labelling on the package.

Mr. COOPER: We have also started to use that step by stating on the label “read the label carefully”, and these words will be incorporated in a red octagon on every pesticide label that we will be putting out in future, in both English and French. We hope this will help. But it takes up a considerable space, and unfortunately you are forced to reduce the instruction in favour of such a sign of this type. It is very difficult in producing a label to know just what you should put in, and what can safely be left out. But we have turned towards this step with all pesticides from Cyanamid of Canada, and they will contain a red octagon, and the label will be changed to indicate the wording I have given. Pesticides themselves are often poisonous in concentrated form, but few people feel or realize that the solvent used in the pesticide is often just as toxic if not more toxic than is the pesticide itself.

Mr. WILLOUGHBY: Do you have in mind any individual pesticide?

Mr. COOPER: Getting into the field of antidotes, I have had a running argument with certain people of the medical faculty concerning the actual meaning of the word antidote. We have one in the cyano-phosphate field which is not strictly speaking an antidote, if you wish to use the meaning of the term in that way, and I have argued with the medical profession about it. Atropine is an antidote in the arsenic phosphate field, but according to the strict interpretation of the word antidote, this is not true, because atropine does not clear your arsenic phosphate poisoning, or destroy the poison itself. It does however permit cholinesterase to go to work, which is not truly an antidote. I would like to have someone from the medical profession here, or a representative, tell us how we can overcome this problem. We have had doctors who did not wish us to put “dangerous—antidote” on it, because they thought it would be misleading.

Mr. MACALUSO: On page 27 of your brief, getting back to labelling, you said:

We would like to repeat that a grower's best bet for using a pesticide safely is to strictly follow directions given on the label.

And you said, how do you get people to read a label? I agree with that statement. But what do you suggest? In the field of technical users of pesticides, and having regard to your home consumer, what recommendation would you have which would cause them to read the labels?

Mr. COOPER: We follow several ways here. First of all, I take every opportunity to speak to society meetings, rose growers, horticultural groups, ladies' auxiliaries, and so on. I spend probably from 30 to 35 per cent of my evenings to this type of groups. Then, we make use of the radio and television. Moreover, I release articles, and I use the newspapers. I know of no other way we can reach the public at this time.

Mr. MACALUSO: That is the practice followed by Cyanamid?

Mr. COOPER: Yes.

Mr. MACALUSO: Are you familiar with the practice followed by any other producers of chemical products?

Mr. COOPER: Yes. You will find that in varying degrees most of your major producers do take every opportunity to get to the public.

Mr. MACALUSO: Would you not agree that there is a danger? You say it is inherent that consumers do not read labels, or do not follow the directions of a label. Do you not think that the use of larger labels and larger printing would be one way to bring it home to the consumer?

Mr. COOPER: The problem is pinpointed in that the home owner deals mainly with very small packages. On the other hand the agricultural producer would use a five gallon container, or a 50 gallon container or a large box. There you have no problem in putting an adequate warning on the container. But when it gets down to the small container that a home-owner uses, this is where you get into an extremely difficult problem. Moreover, in Canada this is complicated by the fact that we have to have bilingual labels. So when you put the material into both English as well as French, and you are dealing with the label for a four ounce bottle, you have only a very small surface with which to work. We have tried to overcome this by increasing the size of the printing, and placing a pamphlet attached to the neck of each container. However there is always the danger that the home owner will remove the pamphlet and throw it in the ash can. I know of no practical solution, but I agree with you.

The size of the print is important too, but you cannot put all of it in large print on a label, because your package is too small. And then, if you try to increase the size of your package, the consumer will complain that whereas he has purchased a big package, there was only two ounces of material in it. So there is a big problem, and it is very difficult.

Mr. ENNS: What products does Cyanamid market at the present time?

Mr. COOPER: In which field?

Mr. ENNS: In the pesticide field?

Mr. COOPER: Amino Triazole, Cygon (dimethoate), Potassium Cyanate, Granular Cyanamid, Malathion, Liquid Cyanamid, Cynogas ("A" Dust; "G" Fumigant; Ant-Killer).

Mr. ENNS: These products are used pretty widely commercially and in professional use?

Mr. COOPER: Yes.

Mr. ENNS: Do you also market smaller types of products which would be sold in the smaller quantities that you referred to?

Mr. COOPER: Cyanamid of Canada is not in the home user field. But we do market Cygon 2E in eight-ounce bottles. We also market Cyanamid in pound cans, which are used somewhat by homeowners; and of course we have Amino Triazole in one-pound cans, and a new product likely to be coming out next year, which is specified for use against poison ivy, and it will be marketed in a small can.

Mr. STOVEL: Many of our chemicals go to what are known in the trade as formulas, in marketable package for the consumer, and we in turn work with them in developing it properly.

Mr. ENNS: How big is your operation in terms of employees?

Mr. STOVEL: In Canada we operate in several different business fields. We have about 2,500 employees in Canada. Our principal fields are agricultural, which is broken down into four parts: the biggest company is fertilizer and we export much fertilizer. Then we have pesticides, animal products, food products, and food stuff additives. We are also in the general industrial chemical field for processing industry such as, mining, pulp and paper, rubber, and you name it and we have it.

We have a building products division which has several lines of building products, and we have a drug division of which the main line of products is ethical drugs and sutures; and we have a line of consumer products such as dinnerware, plastic dinnerware, cleaning compounds, and so on. So you can see that we are rather diversified in our Canadian operation.

Mr. MITCHELL: How does the introduction of a new chemical compound come about? Is it by accident? I also know that when you produce one you immediately start to work to produce a better one. The study of one chemical may produce another chemical by reaction among the chemicals themselves, and it may turn out to be a better product, let us say, for the treatment of leaf vegetables, than what you are using. Or it might turn out to be a better product in the control of spraying such as fruit crops. Is there an element there as in some of the discoveries of some of these new chemicals which you put on the market.

Mr. WHITE-STEVENS: Well, if I may answer the first part as to how this is in general, then perhaps Dr. Cooper can be more specific with respect to the Canadian companies.

I do not know if you have one of these pamphlets, but we in Cyanamid have a particular division that we call CL, or the field chemical laboratory division. Many of these chemicals have been isolated from natural products by our own chemists. Some of these things are open chemicals available to anybody and not under patent control. Our file must approach a weight of 200 pounds at the present time. These things are continually put through a series of screens in the agricultural division where we screen them for possible use as food additives, as chemicals for plants, and so on, as chemicals for use with animals, for nutrition, as food additives, or for the control of animal diseases. These screens are carefully designed, and we have to determine whether or not the compound has a likelihood of use.

We usually find one compound in 500 which may have a use as an insecticide. So that compound goes into a secondary and more intensive screening to determine first of all whether or not this is true, and whether or not it is really valid. About that time we begin to do toxicological work, because we have men working with it, and if it is overtotoxic, we want to know it, and if so we would abandon it right away.

If not, we will then proceed through the secondary screening, and if it looks good all the way down the line, after two years in our laboratories, we turn it over to the experimental stations and the land grant colleges for further study. Then we have to bring in our engineers to scale it to pounds from grams, and they go to work on it, and compare the possible use of the compound under field conditions, and within the experimental facilities available at each step in the United States and in the provinces of Canada. This is our well organized approach to the problem.

We like to think that we have found this compound by organized direction, but many of the great discoveries that we have made have really been made incidentally. Some group of fellows thought they would do it this way instead of that way. The point about the scientist is that he observes any surprises that come up and pursues them. Some of the greatest discoveries made have been achieved or developed in this way. For example, we had been feeding antibiotics to animals as a means of improving their growth, and this was quite incidental. We were looking for something else. When we got more growth than we expected, we thereupon searched further to discover the reason, and in doing so we found antibiotics. I happened to be in on it. It was a complete surprise to us.

However we do try to follow a rather consistent procedure based on experience, and with the hope that we are continuously improving the accuracy and the efficacy of our methods. Does this answer your question?

Mr. MITCHELL: Yes, it does. But another question arises. You mentioned the toxicity of pesticides and insecticides and so on. Have you any proof as to certain levels of ingestion of pesticides and insecticides by humans of what you would call a safe amount of residue? Have you any sure idea of the levels from any criterion, whether you say this is or is not injurious? I have asked this question of other witnesses and I am not sure. I do not know whether it has been properly answered or not.

Mr. COOPER: We do have an indication of the toxicity to the human being in the case of malathion. We have had a selection of human beings who have been exposed to various concentrations over varying times. We also have data when dimethoate has been fed to human beings, and the responses have been closely documented. We have found in the case of malathion that the human result closely approximated what we would expect to find in a dog or rat. This is as far as I can say. But we have documented evidence as far as the toxicity of these compounds goes. I mean these two compounds as they have been applied to human beings.

Mr. MITCHELL: You are still engaged in the problem to show what percentage of waste would be in it?

Mr. COOPER: I was thinking more of the toxic level. We do know that at the levels we worked at the residues we expected to find indicated that the product would not be detrimental to the human being, to the best of our knowledge. We have with us reams and reams of brief. We put these out for the medical trade, and we send them all over Canada. I send them to every source. These are updated from time to time whenever we get further information. This one deals with phosphate esters, and it has been based a great deal on the work being done today on cholinesterase.

Mr. MITCHELL: This would be sent to poison control centres?

Mr. COOPER: Yes, and to the medical profession generally as well as to veterinarians. We try to insure that they are kept currently informed. But the difficult thing is to impress upon people to keep their literature current. There is so much of it going out from industry to doctors and veterinarians, that the tendency is for them to throw it into the waste basket. Yet it contains invaluable information which could save lives, if it were retained. As far as toxicology is concerned, I believe you have had petitions presented here. I have one here, if you are interested.

Mr. MITCHELL: Maybe I am asking for some heavy reading.

The CHAIRMAN: Very heavy reading indeed. I take it this is all one project?

Mr. COOPER: Yes, this is all one project. This was the start of it. I believe there is no other field in our welfare that is so well documented as

the pesticides. And yet we are under fire. We use many, many other things that do not require the proof of efficacy and safety that is needed in the pesticide field. You can go and buy a car, get a driver's licence, and nobody worries you. They test you once, and that is it. But with pesticides we are continually working.

This current year, 1963, we have spent literally \$250,000, on malathion yet it is now 12 years old. We are continually spending money and investigating further and further the effects of toxicity, and we inform all the governments and we work with them. If there is any question that they wish to have answered, we will try to deal with it.

Mr. ENNS: As we hear more and more intelligible witnesses such as yourself we become more convinced that the alarm "bell" sent out by Rachel Carson should not have been printed, or should not have received such wide circulation. Do you believe there has been an unreal alarm started by Miss Carson's book?

Mr. COOPER: It was unreal; however I would not say it was all bad. I think that one thing from our standpoint is beneficial, and I believe your government has helped. We are bringing out facts of which small groups of the public were not aware. They just did not know what went on day by day, and the steps that were being carried out to protect them. We are not saying that there were not mistakes made, and that we will make mistakes in the future quite possibly, but we are moving closer and closer to the place where it will be impossible to make mistakes through the incorrect use, or the correct use of compounds because we did not have sufficient information. This particular product, malathion, is perhaps one of the best documented compounds that we have today. I think everybody has worked on it from the standpoint of the scientist and the medical profession, and we are compiling a tremendous reservoir of information.

I can think of no other product that we use in everyday life where this type of information has been required.

Mr. WILLOUGHBY: I notice this pamphlet which I have here now, and it is very interesting, about malathion. I presume there must be some research work going into the effect of mass spraying as in the forest industry and other large industries, where there is a large amount of spraying, and the effect of it on wildlife and fish.

Mr. COOPER: Yes, sir, we are very interested in these things. Malathion has been very well checked through. It was not used in large scale forest spraying for the spruce bud worm control, because of the toxicity to fish. It went so far and was stopped. But we do know that malathion has had beneficial effects through mass spraying of such animals as deer, where it will control parasites on the deer, and also help many skin diseases, such as the mange which we had found in certain over-populated deer areas. We have also found that in the use of malathion it will help to increase the bird population through control vectors as in the case of the red-winged blackbird.

Mr. WHITE-STEVENS: Yes, and I might add that Hunt and Keith who belong to the wildlife service working out of Davis, California, made a careful study of the effect of malathion on bird life incident upon control of the red bell pine in this manner in the Yosemite forest of California. They took four areas which were sprayed and four which were not and carried on a check of them. They made bird counts immediately before spraying, 96 hours after, one month later, and finally one year later. When the results were carefully analyzed and interpreted, there was no significance whatsoever in the bird count at any time. In fact there was a slight numerical reduction in the bird count immediately following the spraying, about a month later, because some

of the birds had migrated, but the insects were still alive. The workers came to the conclusion that there was no significant impact on bird life in these particular areas following the spraying.

I have with me also a publication from the Pennsylvania department of agriculture by Dr. Nicholas. I can lend it to you. I would be glad to leave this copy with you. This is the only one I have, but I think I have some more at home. I think I could easily get them for the committee. I recommend this to you. I think it is the most complete analysis of the gypsy moth control program in the state of Pennsylvania that I have seen. As you know, there is control of the gypsy moth in the New England states. Far be it from me to speak against the federal government. I understand there has been agitation respecting whether or not it has been wisely undertaken. But here under the effects on wildlife Dr. Nicholas makes clear what the impact is, and points out intensive experiments carried out by the department of agriculture in Scranton, and shows there was no impact on bird life. A count was carried on by the Scranton bird club of the Audubon bird society, and these officials were satisfied that there was no damage done to the bird life, including the nesting birds. This publication has been available for quite some time. It was published in 1962, and it was available, I know, to Miss Carson.

I also draw to your attention the writings of Dr. Hayes of the United States public health service. He has published a large volume on D.D.T., discussing its effects on wildlife, and only in certain cases were they able to establish any given impact on wildlife. There had been a feeling among those in the field that there had been. Yet the amount of damage to wildlife in North America has been less than in Africa where animals have been slaughtered with reckless abandonment. We feel that the agriculture of the American farmer, and of the American forest operators, such as Weirhauser and so on has paid close attention to wildlife, and that they are as much interested in maintaining it as they are in growing crops and lumber.

Mr. McDONALD: If I might interject something: I read the current issue of "Sports Illustrated" for November 18. This is one of my favourite reading pieces. I noticed in it a story on the roundup, and what the hunting conditions are in the United States this year. I would like to read two sentences from it, to you:

Wildlife populations all over the nation are bigger and healthier than ever, not in spite of pesticides, but in many cases *because* of them.

A great many pesticide disasters and portents of disaster, reported in newspapers and elsewhere, turned out to be exaggerations, in one case amounting to two dead pheasants.

Those wildlife poisonings that did occur were invariably the result of misuse or negligence, not the inevitable result of prescribed application.

Pesticide usage is under tight control—growing tighter every day—not only by federal, state and municipal authorities but within the pesticide industry itself.

Mr. GELBER: The World Health Organization has I believe carried on very extensive D.D.T. spraying projects in its battle against malaria not only in Italy but also in Greece where it has had remarkable success. I wonder if the results in terms of these side effects we are discussing have been measured and interpreted by your people. We have had quoted American experience. I think European experience might be very revealing because of the widespread campaign carried on and of the brilliant results of bringing down

the incidence of malaria, particularly in Greece. I was wondering if any of that has been interpreted?

Mr. WHITE-STEVENS: Dr. Hayes in his monograph discusses this matter. He is in control of the department where they decided on these things, and his experience with D.D.T. on the outbreak of typhus was remarkable. He found there were no deleterious effects directly attributable in that case.

Another interesting fact is that the World Health Organization in its program has reduced the incidence of malaria in India to a most remarkable extent. In fact it has been fantastic. I know of no case where toxicity has occurred among the Indians, aside from the odd case where a child may have got hold of a bottle of stuff and drunk it. I heard on the C.B.C., when I was coming here from Windsor, mention of the lives saved per annum under the World Health Organisation malaria program, and when the figure is compared to what it formally was, it is astounding.

The CHAIRMAN: The people who are more apt to suffer the effects of pesticides and insecticides are probably those who worked originally with whatever chemical was being studied. Can you give us any information concerning the people in your own employ who have had trouble with side effects from pesticides and insecticides?

Mr. WHITE-STEVENS: Yes, we, as do many other industrial companies, maintain a medical department in every plant. All our employees have a complete medical examination every year, the whole business. Those who are working with these organophosphate compounds have their blood count checked at least every six days, so we have a record of it, and this is true of people working for other companies such as Dow. In general the record has been excellent, but there have been a few accidents. There was one fatality when a worker spilled some hot compound on himself and did not do anything about it. But the record for the research workers, including the field research workers, with these compounds has been very good. I remember when they started to work on it. There has always been an element of danger in it, but we kept tabs on it, and we have had I think a very excellent record. We have had one accident with organophosphates. We have been able to control them with the exception of the one case which was fatal.

Mr. CÔTÉ (*Longueuil*): As far as the procedure is concerned which you have to go through here in Canada in order to register your product, am I to understand that usually the product that you bring to the market in Canada has already been registered in the United States.

Mr. COOPER: Yes, this is generally true. We usually wait one or two years behind the United States with a new product, mainly from the standpoint that they are working with it ahead of us. In the subsequent screening they will be gathering information, and we will be behind them.

Mr. CÔTÉ (*Longueuil*): Usually when it is accepted by the United States it is also accepted here.

Mr. COOPER: No, no. We must show it as being acceptable for Canadian use.

Mr. CÔTÉ (*Longueuil*): You have to prove—or rather your company has to prove that it has a research department to study these things, and you have to prove that for yourself. Both companies have to do their own research.

Mr. COOPER: We will do the initial research, and then we get support from the Department of Agriculture through their science service laboratories and experimental stations.

Mr. CÔTÉ (*Longueuil*): Do you think these laboratories are adequate or good enough to study these things, or do you think they should be improved?

Mr. COOPER: Personally, I would like to see them expanded for certain aspects of this work, but it is beyond my prerogative to make a flat statement. Personally I would like to see extension of the facilities which are now excellent, but which I would like to see enlarged.

Mr. CÔTÉ (*Longueuil*): Is it easier to get the product through the Canadian government than through the United States government?

Mr. COOPER: I think in many cases it is more difficult in Canada than in the United States. You really should not compare the two. We have our own problems here. I think our opportunities to predict registration are much better here than in the United States; it is much more significant from my standpoint. I have dealt with both of them and I find the Canadian government much more practical. In many cases they are more demanding in what they wish to know. But as I say, it is difficult to compare them. However, of the two I would prefer to have the Canadian system over the United States system. The public may not agree with me.

Mr. WHITE-STEVENS: I am not going to argue with you.

Mr. CÔTÉ (*Longueuil*): How many new products come out every year, not only from your company—but for which registration is sought in Canada?

Mr. COOPER: I would have to ask Mr. McLeod. I am not prepared to answer.

Mr. CÔTÉ (*Longueuil*): Have you any idea?

Mr. COOPER: When you speak of new products, you have to include new uses of old products, or extending the use of current products. We register, roughly, probably not more than one new compound a year as a completely new compound. I am speaking of Cyanamid. But we may register from 20 to 30 new uses of older compounds. With this quantity of malathion material which is on the desk, we submitted a volume at the start, with very restricted use, and probably one or two during the control. But we are continuously developing new uses as proved efficacy and safety come in. The small volumes which you see here are these new uses. We will submit one of them for each new use that we want to put the compound to, and you will note that they are marked in green for goats, sheep, cattle, chickens or for fertilizer. And we will submit these each time we want to expand the use of a compound.

The CHAIRMAN: I think Mr. McLeod should answer Mr. Côté's question.

Mr. W. S. McLEOD (*Supervisor, Pesticide Unit, Plant Products Division*): Mr. Chairman, in respect of new chemicals registered in Canada for the first time, we have this year registered 15. We expect to register one more this week and there is a possibility we may register one more before the end of this year.

Mr. CÔTÉ (*Longueuil*): Is this higher than last year?

Mr. McLEOD: Yes, it has increased yearly over the past four years in respect of new products; that is products containing new or well known ingredients.

We register each year between 350 and 450 new products, but we are unable to keep statistics of new claims for previously registered products as the volume is too great.

Mr. CÔTÉ (*Longueuil*): Are the products used in these new products already in use in other products now?

Mr. McLEOD: Yes, largely so.

Mr. MITCHELL: Dr. Cooper, when you register a new product in Canada is it not covered by patent?

Mr. COOPER: Generally this is true.

Mr. MITCHELL: What is the life of the patent?

Mr. WHITE-STEVENS: It is 17 years in the United States.

Mr. MITCHELL: Is it the same here?

Mr. COOPER: We have a very odd situation in Canada; it is not comparable to the United States. As you are aware, we have several loopholes but, generally speaking, ours is 17 years. However, we do have cases where you can get a compulsory licence and this is used.

Mr. MITCHELL: I am getting into another field now. Are not your pharmaceutical patents being attacked as to their life span at the present time?

Mr. WHITE-STEVENS: No.

Mr. McDONALD: There have been the restrictive trade practices commission's seven recommendations, as you know. Five of those recommendations have been instituted. Mr. Mitchell, as the seventh recommendation affects retail drug stores, I will make no comment on it. However, number six concerns the recommendation for abolishing patents with respect to drugs. This is obvious ridiculousness; and you know, Mr. Mitchell, what a dastardly effect it would have on Canadian industry if this recommendation was put into effect.

Mr. MITCHELL: I had the privilege of appearing at the time in question. It would not worry me at all.

Mr. GELBER: Mr. Chairman, I would be interested in knowing how the company handles research. As you know, the amount you could spend on research is limitless, and there must be some rule of thumb to determine this.

Mr. STOVEL: We operate in many different fields, and we have research going on in a number of these different fields. Normally a business assessment is made in reference to sales and potential profit, where you are going to gamble on putting your research money. Once you have made that broad assessment, then you have to look at different individual activities going on in the research field and determine whether it is worth while or whether you should drop back. It does involve a good deal of guesswork.

Mr. GELBER: Does it bear any relationship to your sales?

Mr. STOVEL: Yes, it bears a relationship to your potential sales and net profits.

Mr. GELBER: You would not have a rough figure in respect of how you calculate it?

Mr. STOVEL: Our company is roughly spending \$2 million in agricultural research on pesticides alone, and this is world wide; that is, it involves what goes on in Canada plus several areas in the United States. Judgment is exercised in respect of what particular types of compounds and pesticides will be followed up.

Perhaps Dr. White-Stevens could give a more accurate picture from the research end and how their recommendations are brought to management.

Mr. WHITE-STEVENS: Of course, what Mr. Stovel has said is correct. Total agricultural research over the entire scope of the field is our major commodity, dollarwise, and we spend in the vicinity of \$6 million a year. This relates to all phases of research and development, including grants to universities and experimental institutions, which are very expensive. I could not tell you what

this figure represents as a percentage of the gross. I do not know what is the gross in the agricultural products throughout the world, because when they get into Cyanamid of Canada Limited they are confounded with other non-agricultural products, and the same applies to the international division abroad. I think the over-all figure for the chemical industry is in the vicinity of between five and eight per cent of the gross, and I would estimate that ours lies somewhere in that area.

Probably the DuPont company spends more funds on research and development than any other company, and their figure goes up to eight per cent. Mr. Greenwell, the president of that company, made a statement to that effect recently before the Security Analysis Society Association. I am quite sure our company comes into that general scope. It is probably more than five per cent of the gross and less than eight per cent, possibly $5\frac{1}{2}$ per cent or 6 per cent. Of course, this includes all the attendant expenses, including the business of registration, the business of extension, which Mr. McDonald mentioned, instructing, and publishing information on these compounds. The whole business is wrapped up in a single entity.

Mr. GELBER: You mentioned grants to universities, and that field was going to be my next question. What is the relationship of the research of your company to the universities? Do you use the universities? Do you give them problems?

Mr. WHITE-STEVENS: Perhaps Mr. Cooper would like to answer that from the Canadian standpoint.

Mr. COOPER: We have grants and aids throughout Canada generally on specific problems. If you are interested, I have here one that came in last week on malathion from the university of Alberta. This was work that was set up with the university through the entomological department. It is for a study of the effect of malathion and malathion additives on resistance in insects for a doctoral thesis; and the insect chosen was the German cockroach. The student, who happened to come from India, worked for three years on his thesis. He has just finished and has obtained his doctorate. He has done an elegant piece of work in connection with resistance on cockroaches as it pertains to malathion.

Those are the types of problem we have studied at the universities. We put out grants, which run from \$1,200 to \$3,500 per year, based on a two or three year program, and we run around \$14,000 to \$18,000 per year in respect of this type of grant.

Mr. GELBER: Do you give them the money and the problem?

Mr. COOPER: No, we do not in any way dictate to the universities what they shall work on. I request that the individual head of the department submit to me ten or twelve copies that he would like to have his graduate students work on, and I will generally pick three or four which I feel will contribute to our over-all knowledge. Then we will say "all right, we will support any one of these four", and we reach agreement by discussion. There is no coercion or request for a specific piece of work. We do not say: "If you do not do this we will not give you the money."

Mr. GELBER: Do you know offhand what universities you are dealing with at the present time?

Mr. COOPER: The University of British Columbia and the University of Alberta; we have a small grant in respect of the University of Saskatchewan; the Ontario Veterinary College; the Ontario Agricultural College; Macdonald College; and one program will go to Laval this coming winter. This varies depending upon whether the school feels they have sufficient students who are interested in entomology, toxicology or chemistry.

Mr. GELBER: Thank you very much, Dr. Cooper.

Mr. WILLOUGHBY: In allotting this research work to the universities, is it your idea to try to prevent overlapping in respect of research so there would not be duplication of the same studies in the different universities?

Mr. COOPER: This is true. We try to have new work done at different places. But at times I may want confirmation on a certain method or in connection with a certain residue problem in respect of a local area. I have done this from time to time because of climatic conditions being different in a specific area; I have had the local university do work for me on the residue problem.

The CHAIRMAN: Are there any further questions?

Mr. CÔTÉ (*Longueuil*): Is your pesticide company in Canada?

Mr. STOVEL: Do you mean is our head office in Canada?

Mr. CÔTÉ (*Longueuil*): I am referring to where you manufacture your products.

Mr. STOVEL: Our main pesticide plants are in Ontario near Niagara Falls.

The CHAIRMAN: Are there any further questions, gentlemen?

Mr. MITCHELL: Mr. Chairman, if there are no further questions I would like to thank the Cyanamid people for appearing before us today. This is the only manufacturer of insecticides and pesticides that has appeared before this committee, and I think they should be complimented for asking to come. We do appreciate the fact they have appeared. They happen to be the only company that has appeared before another investigating committee and they were complimented at that time. I think the company generally deserves a vote of thanks for coming here today.

Mr. CÔTÉ (*Longueuil*): Mr. Chairman, I would like to add my appreciation to what Mr. Mitchell has said. It was very good of you to supply this pamphlet in the French language. We appreciate it very much.

Mr. COOPER: Mr. Chairman, there are two comments I would like to make at this time. In the paper that you gentlemen have we did not stress the part which the federal government plays in its role in the development of pesticides and the help we have obtained from them. We thought you would have gone through this so we stayed strictly within the bounds of Cyanamid. I hope you will appreciate, when you read this, that we do get a great contribution from the government.

Secondly, there was one comment made today that we are ever producing more and more toxic and deadly compounds. This is not true. We are moving more and more to safer compounds. However, at times we do, by necessity, have a tough toxic compound, but we try to limit it to specific uses where nothing else will work. Our company today is working always toward safer compounds, and I would like to correct the misstatement or misunderstanding that seems to prevail that we are only interested in toxic compounds. We are trying to get these compounds as safe as possible.

The CHAIRMAN: Gentlemen, we have been discussing two main documents, first of all, the brief by Cyanamid, and the Role of Agricultural Chemicals in Feeding an Exploding Population, prepared by Mr. White-Stevens. Is it the feeling of the committee these should be printed as appendices to today's meeting.

Mr. OTTO: I so move, Mr. Chairman.

Mr. JORGENSON: There was another pamphlet which Mr. White-Stevens recommended, Mr. Chairman; could that be put in as well as an appendix to today's proceedings?

The CHAIRMAN: It is fairly extensive. I wonder if we could acquire more copies and then send each member a copy.

Mr. WHITE-STEVENS: That will be done.

Mr. OTTO: Mr. Chairman, I move that the Role of Agricultural Chemicals in Feeding an Exploding Population by Mr. White-Stevens be made an appendix to today's proceedings.

The CHAIRMAN: Would you like to make a motion to include the brief as well?

Mr. OTTO: Yes, the brief as well.

Mr. RYNARD: I second the motion.

Motion agreed to.

The CHAIRMAN: Gentlemen, next Tuesday we will have the officials of the Canadian agricultural chemicals association here.

APPENDIX "A"

THE ROLE OF AGRICULTURAL CHEMICALS IN FEEDING
AN EXPLODING POPULATION*

ROBERT WHITE-STEVENS
Assistant Director, Research,

Agricultural Division, American Cyanamid Company, Princeton, New Jersey

The Reverend Thomas R. Malthus in his brilliant *Encyclopedia Britannica* article "A Summary View of the Principle of Population" stated in 1824:

"... that population, when unchecked, increases in a geometrical progression of such a nature as to double itself every twenty-five years" ... "But by the laws of nature ... the food which it produces ... must increase the means of subsistence only in an arithmetical progression."

In spite of the derision and disrepute into which the Malthusian Theory has fallen over the intervening years, Malthus was absolutely correct. The population of the world has increased geometrically, and in spite of wars, famine and disease has done so with surprisingly little deviation for about the last 7000 years.

"DOOMSDAY" PREDICTED

Recently Foerster, Mora and Amiot writing in *Science* (Vol. 132 No. 3436: 1291: 11.4.60) computed the course of world population from 5000 BC till today and calculated "doomsday" as 13 November AD 2026. "Doomsday" is defined as the day when the population of the world arrives at 50 billion, or at 10,000 people per square mile of land surface. The present population of Japan (and the State of New Jersey) approximates 800 people per square mile.

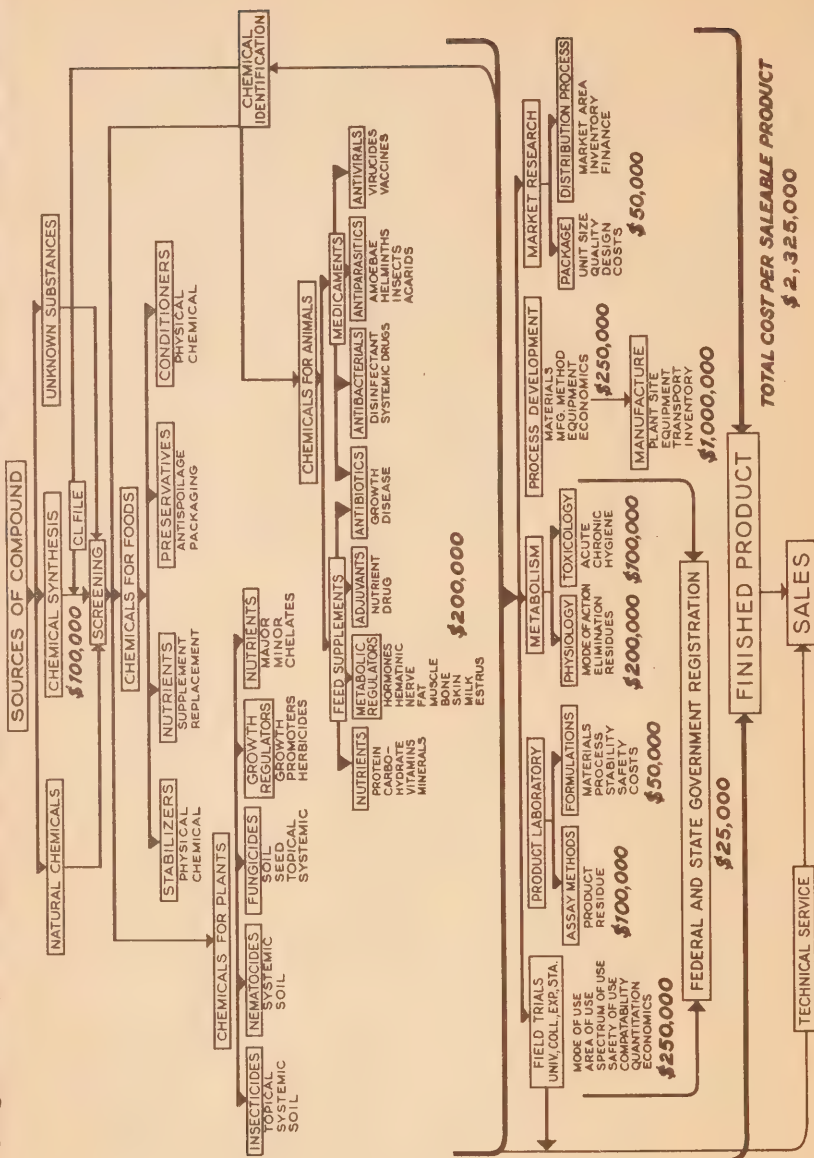
Obviously any conceivable expansion of our food production will not be able to meet the minimal nutritional needs of a population approaching even 25 billion.

For today, with a world population approaching three billion, approximately four out of every five people die directly or indirectly from the effects of starvation. Between three- and four-fifths of the people now have an average daily gross intake of not more than 1800 calories per day, which is excessively aggravated by serious nutritional imbalances of both protein and vitamins. The World Health Organization of the United Nations reports that upwards of 50 per cent of the world's people ingest less than 1500 calories a day—a status of direct starvation.

The minimal arable acreage requirement to sustain one human in food (2200 calories/diem) and fiber was established in 1945 as 2.5 acres. In

* Presented at the 66th Annual Conference of the Association of Food & Drug Officials of the United States, Hollywood-by-the-Sea, Florida, June 17-22, 1962.

RESEARCH AND DEVELOPMENT OF AGRICULTURAL CHEMICALS



the United States in 1955 there were 2.80 acres of arable land per person (population 164 million); in the world as a whole there were 1.25 acres per person, with considerably less in the populous countries of Asia. This allowed surplus food production in the United States, where indeed over-eating became a problem, but in the rest of the world great areas have been at or near starvation.

By the year 2000 the population of the U.S. will approach 400 millions and the arable land, including anticipated reclaimed lands, will be 1.16 acres per person; in the world as a whole, however, there will be less than half an acre of tillable land per person.

"AN EMPTY BELLY . . ."

It is obvious that this presages catastrophe for our type of civilization, unless food and fiber production can advance at a greatly accelerated rate. The political-economic impact of this struggle for the bare necessities of life has been gaining increasing momentum over the past half-century, and the international unrest and tensions of the present are a reflection of the strain between availability and need for food. The tension will inexorably increase, for when men approach hunger they have nothing to lose, and gain can be the only reward of survival. A Russian proverb says, "An empty belly knows no law."

M. C. Chagla, Indian Ambassador to the U. S., stated:

"I want you Americans in your land of plenty to imagine what it means for tens of millions of children to be born who will suffer from malnutrition, who will have no homes to live in, who will have no employment when they grow up, if they grow up, and who will spend their entire lives as disgruntled, envious and embittered human beings—a ready prey to any idea, no matter how monstrous, which might promise them surcease from their squalor and escape from misery, a hope for better prospects and a life more tolerable to live."

WHERE COMMUNISM GERMINATES

Mr. Chagla has described the fertile ground in which the seeds of communism and anarchy can germinate and flourish and has remarked the basic cause of political unrest among the seething masses of southern Asia. Similar conditions are developing rapidly all over the world, and touching our own continent in Central and South America today.

Even in America our population is increasing at a rate calculated to remove our politically embarrassing food surpluses in but a relatively few years. To feed this population in the United States we shall require by the year 2000 an additional 400 million acres of arable land, assuming we can maintain our present yields and productive efficiency. As we do not have

such arable acreage available, we must turn elsewhere to meet this inevitable demand. Alternatives include extending our hegemony over foreign and probably already overcrowded lands, a course repulsive to our very national ethics, or embarking on an intensive population control plan, a matter of great political and spiritual controversy (but none the less inevitable), or we can turn to science and research and expand our food and fiber production far beyond the furthest reaches of our present horizons. We are, in fact, doing this now, for our food production is increasing as rapidly as our population, at least for the present.

In this land of apparently interminable surpluses, we have become not only physically surfeited but complacently apathetic about our food supply. The relatively small cost of our surplus is today a major political issue, yet it is really a minor expense for the insurance it bestows upon the income of the farmer and the cost of food to the consumer. A five per cent food surplus costs the nation only a fraction of what a similar deficit would cost the housewife in increased food prices.

The biblical Joseph stored a surplus of grain in ancient Egypt for the seven lean years, and has been accorded the wisdom of the ages for so doing. Today our surplus would hardly carry us for seven lean months, and if used to feed the hungry peoples around the world, it would be exhausted in less than two months. Thus even with our proficient agriculture and our surplus abundance we are, in fact, not more than a year or two away, at the very most, from starvation right here in America. This, then, is the frame of reference within which any major factor affecting agriculture must be viewed.

"FOOD EXPLOSION" NEEDED

So apart from a general world population control—a "peoplo-stat"—the only factor which can possibly relieve the increasing international stress is a "food production explosion" to match that of the world population. Although it is obvious that some form of population control is inevitable, a world "food production explosion" is now quite feasible.

Indeed, such has already taken place in the United States during the past 50 years and it can continue with accelerated tempo. If political, social and particularly religious mores can be swiftly swept aside, an equally effective "food explosion" can be accomplished around the world within the next half-century, to the immense relief of most of the international tensions which disturb mankind today.

The Foreign Research Service of the U.S.D.A. has recently computed that the total deficiency of food in the world today aggregates 46 million metric tons of protein-calorie equivalent, which represents 35 per cent of current U. S. milk production plus 45 per cent of bean and pea production

and plus 120 per cent of U. S. wheat production per annum. Vast as this deficiency is, it is within reach of increased production in North America alone, and could easily be attained in the world as a whole.

"KNOW-HOW" AVAILABLE

There is now on hand the requisite technology, know-how, equipment, supplies, facilities and capital to increase the world production of grains, pulse, meats, vegetables, fruits, dairy products and fish by a factor of ten within the next decade. It has taken the United States and the other Western nations 150 years to resolve the myriad natural problems which had held farming in chains for five millenia; but now these difficulties have yielded to the advance of science and the fantastic productivity of the American farm is the proof of our success. For we have truly made four blades of grass, four ears of corn, four hogs and four fruits to grow where (as one frustrated Congressman on the Agricultural Committee said), "Damn it! only one ought to grow." We have done this and we could, with effort, make it eight or even sixteen.

This has come about through research and the rapid and assiduous application of its findings literally to the grass roots out on the farm. Our land grant college system, now celebrating its centennial, has taught our rural peoples how to farm scientifically and has, more importantly, inculcated a thirsty curiosity among them to learn and to put into practice every original idea, new piece of equipment, improved strain of animal or plant, useful chemical, redesigned soil management program and fresh approach to the market which their research has produced in a continuous flow over the past century.

We have drawn upon the basic researches of many fundamental and pragmatic sciences in the solution of problems in the production of our food and fiber. The hundreds of thousands of published and recorded journal papers, station bulletins, reviews and texts stand witness to the stupendous intellectual and physical effort which has been devoted to increasing the productivity of American agriculture.

ASTOUNDING BREAKTHROUGHS

We have done this because we have used the scientific method under freedom of thought and enterprise. We have made astounding breakthroughs in plant and animal breeding, in soil management, in forest engineering, in pest control, in agricultural machinery, in animal nutrition and disease control, in food processing and distribution. Each factor has been linked into a continuous chain extending from scientific imagination to the farmer tilling the soil. The research scientist, the technical agriculturist, the industrial chemist, the biologist, the college professor, the county

agent and the farmer have, hand in hand, advanced relentlessly over the past century and subdued, one by one, the most baffling problems and scourges that have beset and plagued mankind since the dawn of history. It has been the work of many people and each has been as important and significant as the other. Great names in agricultural science have come and gone and are revered among us, but no one can assume credit for more than a minute fraction of this great achievement. It has been perhaps the most resounding victory democracy has won.

This is a victory we cannot and must not allow to slip away. It is our margin of security in the modern world. Yet this is precisely what can happen if certain forces currently abroad are allowed to range unchecked and unchallenged. I refer to recent developments in the pesticide and Food Additive Laws, to the administrative interpretation of these laws, and particularly to the wild and fearful publicity which has been made of these laws and their relationship to the use of agricultural chemicals and feed additives on the farm and to the health of our people.

THE "DELANEY CLAUSE"

No one questions the validity and necessity of Federal and State laws designed and administered to protect the health of the consumer of farm products; and every responsible worker in agricultural research, extension and industry recognizes the necessity to establish the safety, as well as the efficacy, of every new chemical to be used in or on edible crops and foodstuffs, *before* such a compound is released for general use. The recent amendment which centered the responsibility for such prior proof of safety upon the manufacturer is just and certainly acceptable to industry. However, attached to the amendment at the last moment was a clause, known as the "Delaney Clause," which, in a few words, if administered literally would reduce the whole agricultural chemical industry and, more important, its function on the farm to a veritable shambles. This circumstance can stop the rapid advances of agricultural science completely, for it will discourage the chemical industry from searching further for new compounds with which to combat the unresolved scourges of the farmer, and it will inevitably leave the grower at the mercy of a thousand pests which will boil back with both relish and alacrity once the pressure of control is removed. The impact of this will be, of course, not only a rapid decline in the volume and variety of the bright array of foodstuffs to which we have so happily become accustomed, but more significantly it will result in a sharp rise in its price—by perhaps a factor of as much as tenfold.

LACK OF DEFINITION

The Delaney Clause states that no residue tolerance is allowable on any chemical used in or on a food or feed product if it is "found to induce can-

cer when ingested by man or animal." On the face of it this sounds reasonable enough, and certainly no responsible scientist, industrialist, food processor or farmer advocates the increase in cancer under any circumstances. The problem arises from the blanket coverage and lack of definition in the Delaney Clause. No indication is given as to how a compound is to be identified as a carcinogen—or cancer inducer—and this is a very debatable point even among cancer specialists. No indication is made as to what dosage level can be allowed or how the resulting residue tolerance can be determined, and as a zero residue is obviously an impossible value to measure, a suspect compound cannot legally be used at all, even under a zero residue registration. For, as analytical procedures are refined, what is a zero residue today may be a detectable or even appreciable level tomorrow. Finally the Delaney Clause implies the compound must be proven to be non-cancer inducing in humans as well as in animals. This is a manifest impossibility to achieve even if such experimentation was feasible, for one may be able to prove a compound *is* a carcinogen, but one cannot prove it is not, anymore than one can prove one is not married. By strict interpretation then, the Delaney Clause virtually precludes all new compounds from the agricultural and food market.

SUPERSTITION GAINS ASCENDENCY

As with all such matters of general concern and vast complexity, ample opportunity is provided for misunderstanding, illogical conclusion and unfounded fear to arise. In such an atmosphere, decisions of policy affecting the welfare and livelihood of millions of people may be based not on knowledge but on a lack of it, and prejudice and superstition gain ascendancy over scientific truth. In recent months, while hesitancy reigned in administrative quarters, a noisome and prevaricative publicity has been made of these new laws, of their relationship to the use of agricultural chemicals in the production, processing and distribution of our foodstuffs and of the alleged hazards these substances may have upon the health of the people. A wave of fear and alarm has been deliberately fomented among the consumers of our country, a wave calculated to sweep away the trust, assurance and honest thinking in the business of agriculture and food production that it has taken our agricultural colleges, experiment stations and industry nearly one hundred years, and uncounted effort, to establish.

This criticism, essentially destructive in tenor and intent, is based on half truths, scraps of irrelevant and unrelated evidence, much of it taken out of context and out of time, and largely founded upon superstition and outright falsehood. Books have been published under sensational and misleading titles by authors with neither training nor experience in the fields they purport to discuss; articles have appeared in obscure journals whose goal has been circulation rather than veracity; and the net effect has been

to incite fear and consternation among the consumers of America out of all proportion to any possible or real danger involved.

A.M.A. POSITION

The Council on Foods and Nutrition of the American Medical Association has recently (*J.A.M.A.* Vol. 178 No. 7: 11.18.61) published the following official statement:

"The Council on Foods and Nutrition recognizes the contributions that chemical substances in food production, processing, and preservation have made to the quality and quantity of the American food supply. While many chemical additives are essential to efficient agricultural production, others are vital to the manufacture of food products. There is no reason to believe that the present use of chemicals in foods is endangering the health of people. Responsible manufacturers have made careful safety tests before the introduction of new chemicals, and the Food and Drug Administration is diligently and effectively protecting consumers from presence of hazardous chemicals under existing federal laws.

"It is the considered opinion of members of the Council on Foods and Nutrition that the Delaney Clause . . . and the similar clause . . . in the Color Additive Amendments . . . prohibiting the setting of tolerances for the use of carcinogens in foods should be either repealed or revised. Technically, this special provision contributes nothing to the safe use of food additives since any hazardous use of an additive is already prohibited in the general provisions of the food additive amendment. It is probable that the clause could prohibit the addition of certain essential nutrients to foods if a substance was shown to be carcinogenic in any amount. A literal and overly broad interpretation of the Delaney Clause would not make a demonstrable contribution to public safety."

Many statements have appeared recently in the popular press which are deliberately calculated to generate electoral support for those who propose legislation that only hampers the progress of our agriculture and with it the highest standards of living, health and happiness that man has ever known. The only alternative offered for our present process of agriculture by these critics is to return to the jungle and employ the so-called natural or "organic" way of life. It never occurs to them, apparently, that this is precisely the way some three-quarters of the people of this earth do live now—if it can be called living. There are hundreds of millions of wretched, crawling human beings desperately clawing their way from one scrap of food to the next, with neither thought nor desire for the science of farming to improve their lot. This is to what the natural, "organic" way of life has chained them. It could very readily also reduce us to the same bondage if we should abandon the scientific process in our agricul-

ture. One point is clearly certain: nature would quickly re-establish her balance, and the first factor to be balanced off would be man himself (he would promptly be decimated), for in terms of the biological law of equilibrium man himself has become a veritable plague upon the face of the earth.

"WILD . . . THEORIES"

One so-called "authority" on the "organic way" recently stated in a published book that the development of cancer late in life is induced long before or during the mother's pregnancy, and even earlier perhaps, by her inconsiderate ingestion of foodstuffs treated with additives or fruits and vegetables sprayed with pesticides. From this point he extrapolates his thesis to include the diet of the father also as having a delayed carcinogenic response in the offspring. Surprisingly, the "eminent doctor" failed to seize the opportunity to contend that the most effective anticarcinogen, therefore, would be contraception.

Amusing as some of these wild, and obviously untested, theories of farming are, unfortunately it has now become a very serious matter. The immense strides taken by agricultural science in America have effected a highly significant political shift in the interests and livelihood of the electorate. One hundred years ago one farmer fed himself and three others; today he feeds himself and twenty-four others. These surplus non-agricultural peoples are those who have made our industries, our education, our research and our culture flourish. This has given America its power, but it has also inflated our cities and suburbs and proportionately reduced our rural peoples concerned with farming. The result is that the American farmer is rapidly becoming a political minority by dint of his own industry and competence. At the same time, forces are appearing in our Federal and State legislative bodies which, pressured by uninformed but vociferous groups, are introducing legislation that can contribute virtually nothing to the welfare of our people as a whole and concomitantly severely harass our farmers and impede the progress of our agriculture.

OTHER BILLS ENACTED

The Delaney Clause, discussed above, is a case in point. The Sherman Cooper Bill relating to the use of animals in research is another. There have been similar bills considered and passed by State legislatures, and generally hastily rescinded in confusion. One required a farmer or feed dealer to secure a veterinarian's prescription each time he supplemented a batch of mixed feed with a sulfonamide drug; another required that each crate or box of packed vegetables or fruit would have an adhering sticker that listed all the agricultural chemicals (by generic name) employed in the raising of

the crop. As any box of produce from a packing shed could readily represent as many farms as the number of units in the box, the costly impracticality and utter infeasibility of such proposals should be obvious. The mere fact that such are not obvious illustrates vividly the colossal ignorance of practical agriculture that obtains in such legislative quarters.

The one point emphasized by Dr. Emil Mrak, Chairman of the California Special Committee on Public Policy Regarding Agricultural Chemicals, was that throughout the hearings, among urban consumer groups, there was a consistent sense of ignorance and suspicion concerning agricultural chemicals and a consequent distrust of the farmer, the extension man, the college and industrial research worker and of the Federal and State control administrators. This, of course, is revealed repeatedly in the various books, pamphlets, magazine and newspaper articles published on the subject for public consumption. This is the real problem confronting us, and one to which all of us concerned with agriculture should address ourselves with tenacity and vigor. For in a democracy it is essential to let the people know the facts and, having done so, we can rely upon their collective judgment.

There are few people who have a clear concept of the investment in expense, time, effort and facilities by both government and industry involved in the discovery, development and commercial application of a new agricultural chemical.

"ARRANT NONSENSE"

Too many of the general public, including some members of State and Federal legislative bodies, have accepted without question some of the arrant nonsense published in the lay and pseudoscientific press, which implies that new chemicals are dumped into commercial channels without adequate testing for safety, efficacy and economic validity. The immense investment required to meet the established regulations of both Federal and State offices, which currently averages over two million dollars per new compound, is assurance enough that no company is going to be cavalier about the utility or the safety of their product in the market place.

There is a distinct difference between the approach of a college or experiment station and that of a commercial company into the field of agricultural chemistry. The land grant colleges and experiment stations have a specific locale of responsibility within a state, for perhaps a single crop or group of related crops or domestic animals. Their concern is one of specific problems. They look for a method to control the problem, turning to convenient sources available to find the solution. Their approach is, in short, local, specific and intensive.

THE SCREENING PROCESS

The chemical company, on the other hand, searches for new chemicals and more economic sources of familiar compounds. It screens these chemicals in search of useful activity, and the nature and direction of the screens employed depend upon the market interest and facility of the company in question. If its interests are confined solely to pesticides, it may restrict its screening procedures solely to these objectives. On the other hand, if the company has wide and varied interests, it may retain a central file of all its chemicals and systematically screen them over a wide array of quite unrelated uses.

Each screening test is a carefully researched and statistically calibrated procedure designed to sort out active from inactive candidates with a precision of at least 95 per cent. Any candidate which emerges positive in the primary screen is at once checked in secondary and tertiary screens to confirm its activity and raise the odds for acceptance from 95 per cent to over 99.9 percent. Once a particular activity is established, all its chemical relatives (analogues) are also screened to determine if even more useful related compounds can be found.

Once a positive possible utility among a family of compounds is established, search is then made to determine in what areas of the country and on what product, crop or animal it is likely to be of valid economic use.

Approach is then made to the agricultural college and experiment station staffs who are expert in the particular problem to which the compound appears to be applicable. On the basis of the preliminary utility and safety data, they will decide whether to go to the field with the compound and apply it experimentally under proximate farm conditions. Such field testing usually proceeds simultaneously in as many as a dozen or more areas and over a period of at least two years and often for as long as five years.

Concomitant with these extensive field trials, the company proceeds with research and development of other phases necessary to establish safety, stability, compatability, metabolism, toxicology, formulations, manufacturing process development, and finally market research to determine where, how, when, and in what form to introduce the product into commercial channels.

TWO YEARS IN DEVELOPMENT

After at least two years, and usually more, of this intensive research and development, the entire data sheets are collated into a comprehensive report and submitted to the regulatory offices of the Federal government that are concerned, usually the U.S.D.A. and the F.D.A. Their experts go over the evidence in detail, usually requiring additional evidence of

safety, utility, control, etc., or further elaboration of that data already submitted. Then, if the government examiners are satisfied that the compound fulfills the legally established requirements in accordance with proposed label claims; that the host plant or animal is adequately tolerant to it; that it is safe for humans to use or consume; that it is practicable to use; that it is stable in storage and distribution in the time and environment of its use; that it is compatible with other materials likely to be used with it; that it can be assayed reliably in its method of use; and finally, that the product is economically valid—then it may be registered.

Only when this roster of regulations is met to the full satisfaction of the government authorities is the product registered and allowed to enter interstate commerce, and then only within the strict confines of its approved label claims and recommendations and within those states whose own regulatory agencies are willing to accept the data as presented to the Federal authorities.

DANGER REDUCED TO MINIMUM

This long and tortuous course is by no means complete, however, when the first label is registered, as it must be, at least in part, repeated for each successive additional use and label claim for which registration is sought. It is obvious that this necessary and accepted restraint upon the evolution of new chemicals for agriculture exerts a massive screening effect that reduces the chances of the emergence of products, dangerous to the consumer, to a minimum.

The fact is that new chemicals are so critically studied and examined before they are released for commercial use that their potential hazards to human health are not only less but better understood than many of those which occur in so-called "natural" foods.

CARCINOGENS IN "NATURAL" FOODS

One of the major themes constantly recurring in the literature opposed to agricultural chemicals contends that only "natural" compounds are safe and only "natural" controls of pests and diseases are really effective. The argument that only "naturally grown food-stuffs" (whatever that means) are safe for human consumption because nature ensures that they will be free from carcinogens, toxins, allergins, goitrogens, adverse enzymes, etc., is completely in error.

There are, in fact, a whole array of well-accepted and long-used "natural" foods which are now known to contain appreciable amounts of suspect carcinogens, and doubtless many more will become known as food chemistry advances. A few familiar examples are tannic acid in tea, in nuts and in many fruits; capsicum in peppers; thio-urea derivatives in

virtually all cole crops; arsenic in shell fish; selenium in many cereals, fruits and vegetables (which incidentally is quite possibly an essential nutrient element for all warm-blooded animals, including man); cobalt in all meats (also a major component of vitamin B₁₂ essential for blood formation); iron found in virtually all foods (and a component of human blood); estrogens found in all meats and also in humans.

Whether such substances induce carcinomas or not depends, of course, upon a number of other factors, the principal one of which is dosage intake versus metabolism and elimination rate. Similar consideration applies to all agricultural chemicals.

It is frequently argued that pesticide and feed supplement residues are objectionable even in minute amounts as they may induce allergies, yet innumerable natural foods induce allergy in man. Such common food-stuffs as cow's milk, eggs, fish, particularly shell fish, pork, chicken, cheeses, wheat, corn and a wide variety of fruits and vegetables are authentically recorded as allergenic in man under certain conditions, regardless of whether they have been treated with agricultural chemicals or not.

There is also a wide variety of cyanogenetic (cyanide producing) compounds found in the seeds of almond, peach, plum, apricot, cherry, apple and pear; also in lima beans and java beans and, of course, in the Christmas treat marzipan; and in many animal fodders such as sorghum and grasses (Johnson, Sudan, Bermuda and arrow), in white clover and linseed cake.

Again there are natural foods which contain anti-enzymes that can readily induce vitamin deficiencies when consumed in excess. Examples include avidin from raw egg white, which produces biotin deficiency, thiaminase in certain fish produces vitamin B₁ deficiency (beriberi); pellagrogen in corn meal induced a widespread condition of pellagra among the poorer peoples of the Southern states until it was recognized as a niacin deficiency.

Among animals dicumarol in certain clover hays induces vitamin K deficiency and hemorrhage, while unsaturated fats in the diet of poultry may induce encephalomalacia which is controllable with dietary vitamin E. Linseed oil meal fed in excess can induce a vitamin B₆ (pyridoxine) deficiency.

THE "CRANBERRY BOGGLE"

During the "cranberry boggle" of 1959, the industry was virtually ruined because it was alleged that part of the crop had been "sprayed with a violent carcinogen." Actually the experimental evidence accumulated both before and since the incident indicates that the accused compound is not a carcinogen but a goitrogen, a chemical which will cause the thyroid gland to enlarge, presumably by preventing the gland from absorbing

sufficient iodine. The effect has been found to be completely reversible by removing the compound from the diet, a fact, incidentally, which should be sufficient to also remove it from the carcinogen list. Furthermore, the maximum amount of residue found on the cranberries, a small number of which had admittedly been illegally sprayed (in violation of label instructions, incidentally), was of such magnitude as to require the daily consumption of some 15,000 pounds of raw cranberries for over ten years to provide a goitrogenic dose in man. This would have been a prodigious gastronomic feat even for Paul Bunyan.

However, a much simpler way to secure appreciable levels of goitrogen, if so inclined, is to turn to "natural" sources with a diet well fortified with turnips, kale, cauliflower, peanuts, soybeans, mustard, beets, peas, beans, spinach, lettuce, carrots, celery, chard, green peppers, filberts, pears, strawberries, peaches, apricots, raisins, milk, oysters, clams and, that epitome of all natural food lovers, raw liver. The list looks like a recipe from a book on "organic gardening," but be sure not to cook any of the items: it destroys the active principal.

CONTROL OF INSECTS

Biological control of insects, parasites and diseases is admittedly the ideal method of control; however, it is highly specific, too late, too slow, too uncertain and too costly. Nevertheless in certain specific areas it has been significantly successful. The milky disease control of Japanese beetle, the irradiation sterilizing of male screw worm flies, the use of lady beetle (*coccinella*) larvae to control alfalfa aphids in the valley pockets of the Western mountains, and spraying or dusting the spores of *Bacillus thuringiensis* for control of certain moth and butterfly larvae are all good examples of effective biological control. However, each is quite limited in the scope of its use and efficacy.

The grower, however, is confronted with a whole array of pests, insects and acarids, fungal and bacterial diseases, parasites and weeds, several species of which may attack his crop or animal herd simultaneously or sequentially during its production life. Control of one pest and none of the others, or even control of all but one, is often as futile as controlling none.

Federal and State authorities require the farmers' products to be free from insect blemish and disease, to be of specified grade size and conformity for interstate shipment his animals must be free from contagious disease, vermin and parasites to pass meat inspection department standards. He therefore cannot, indeed he must not, fall below the rigid requirements of grade and quality. Furthermore, the processor who packs the grower's raw product is obliged to meet label specifications rigidly if he proposes to ship in interstate commerce.

"ORGANIC FARMING" IN CHINA

The grower must, therefore, exercise precise and exact control over *all* the pests that plague his crops all the time. How he can be expected to do this without agricultural chemicals is, of course, a point the "organic school" answers by maintaining that if the grower only used organic manures (no "hideous" chemical fertilizers), if he allowed the birds to eat the few, very few, insects that would deign to attack "organically grown" crops, if he would throw away his pesticides and behemoth monstrous spray rigs, if he would just go back to "nature" and become "organic," he would have no troubles with his crops at all. This is, in fact, quite true of course, but only for the reason that he would have no crops at all—e.g., China, which has tried to grow crops "organically" for five thousand years and lives on the edge of starvation to this very day.

The farmer is therefore caught between the rigid rules of product grade, quality and uniformity laid down by the marketing administrations, Federal and State, on the one hand, and increasingly stringent limitations on the use of agricultural chemicals on the other, with no sensible, constructive alternative offered to relieve the encircling pressures.

There have been a number of reviews of the problem by competent committees and authorities, both Federal and State, in recent months. All have carefully considered the pros and cons of the relative value of the use of agricultural chemicals versus the alleged dangers to public health and wildlife conservation, and without exception these qualified groups have reported that food production and the nutritional living standards of Americans could not obtain if agricultural chemicals were abolished. Each group recognizes the potential hazards involved in the widespread use of certain pesticides but concedes the standard procedures worked out by Federal and State authorities in collaboration with industry are adequate and safe when such pesticides are employed in strict accord with approved label recommendations.

THE REAL PROBLEM

Unfortunately, most of these excellent reports are read mainly by technical agriculturists who are virtually in complete unanimity with one another as to the controlled and necessary use of agricultural chemicals. The real problem lies in bringing a sense of proportion and understanding to the general public on the necessary use of agricultural chemicals in the production of foodstuffs; in re-establishing public trust and confidence in the reliability and sincerity of agricultural research workers and administrative officials in the government departments, colleges, experiment stations and industry; and in convincing the consumer that the bright array of foodstuffs offered in the retail markets of America today is the

most nutritious, wholesome, safe and economic (21¢ of the take-home dollar) of any country in the world.

This message must be hammered home in a thousand ways in a thousand places, and be given simply and factually in understandable terms and with sincere conviction.

For we do not have much time to prevaricate and to dissemble with our food supply; we have guests coming to dinner on New Year's Day 2000, nearly 400 million of them.

(Reprinted from ASSOCIATION OF FOOD AND DRUG
OFFICIALS OF THE UNITED STATES, Vol. 27. No. 1,
January 1963.)

APPENDIX "B"

Reference Paper

*Describing the Procedures followed by
Cyanamid of Canada Limited in preparing
a Petition for Registration, for specific
uses, of a Pesticide.*

Submitted to
The Special Committee on Food and Drugs
by
Cyanamid of Canada Limited
November 21, 1963

INTRODUCTION

Cyanamid of Canada Limited is a subsidiary of an international corporation which is one of the most diversified and largest of chemical producing companies in the world. From its first plant, established at Niagara Falls, Ont., in 1907, it has grown to become an acknowledged leader in the development of a wide range of chemical products.

In the area of agricultural chemicals Cyanamid is recognized for its record of discovery and development of new products, in most cases the result of its own research or of research carried on at universities and agricultural experimental stations with support from Cyanamid. Today, much attention focuses on the role of pesticides and their effect on agriculture and consumers of foodstuffs.

Therefore, this Reference Paper is presented in two sections. The first section sets out in full detail the description of how pesticide products are developed. Cyanamid's basic research facilities are located at Princeton, N.J. Cyanamid of Canada provides financial support for this research, thereby enabling us to take advantage of centralized activities which need not be duplicated in Canada—a condition which produces significant economies and consequent lower prices for Cyanamid pesticides in this country.

The second section shows how cyanamid of Canada takes full advantage of all data on the research history, efficacy and toxicity which is produced by its parent company, then adapts to this knowledge its own special knowledge of the pesticide's capabilities and toxicity in relation to possible Canadian use.

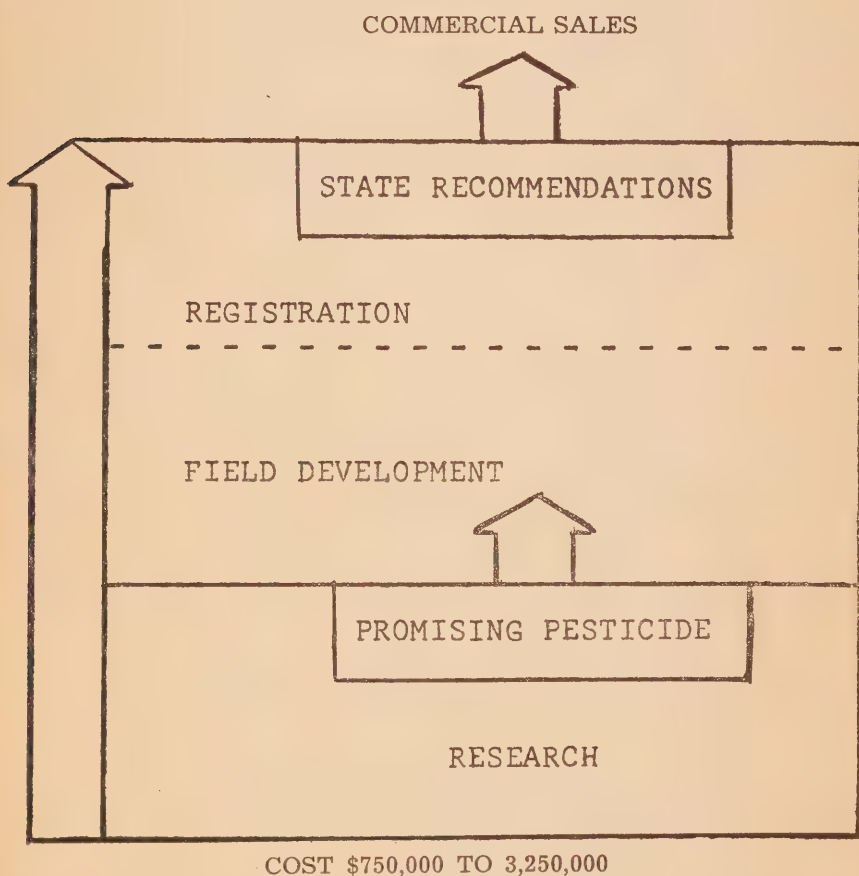
PART I

THE DEVELOPMENT OF A NEW PESTICIDE

I. RESEARCH STAGE IN DEVELOPING PESTICIDES

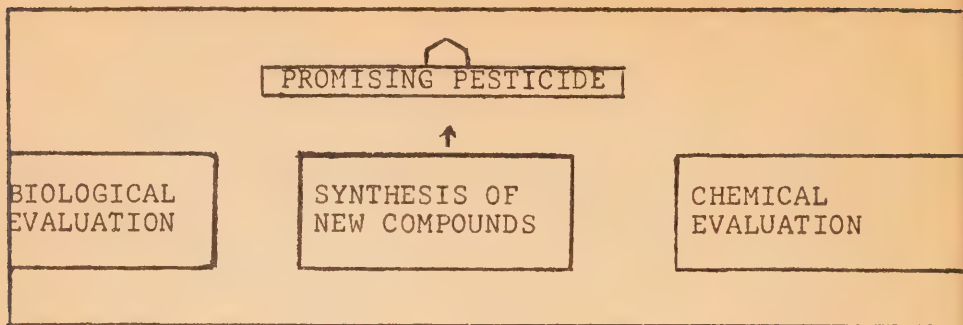
The development of an agricultural pesticide may be likened to a three-stage rocket. (Chart 1), the First or Research Stage delivers the promising pesticide from the laboratory of the sponsoring chemical company for field testing. Here, the second or Development Stage carries it to all parts of the country where it is evaluated against many pests on a wide range of crops—in hopes of orbiting the third or Government Registration Stage—into commercial sales.

Chart 1



According to a survey of Basic Pesticide Producers, made by the Western Agricultural Chemicals Association in 1958, the cost of discovering and developing a new pesticide through the first commercial registration runs from $\frac{3}{4}$ to $3\frac{1}{4}$ million dollars. Since other sources list the average cost from $1\frac{1}{2}$ to $2\frac{1}{2}$ million dollars, you can readily see that before a new pesticide is marketed a large initial investment is required.

Chart 2—COMPONENT PARTS OF RESEARCH STAGE



The Nucleus or backbone for introducing a new pesticide is the RESEACH STAGE as shown in Chart 2. Chemical companies such as Cyanamid usually accumulate a large stockpile of chemicals which have been synthesized by other Divisions within the company. Agricultural Research Groups starts by screening these compounds for biological activity against agricultural pests. If a compound shows promise, related compounds may then be synthesized in hopes of discovering a more active material. Those which continue to show promise are chemically assessed before they are sent out for extensive field testing.

Chart 3

BIOLOGICAL EVALUATION

1. BASIC EVALUATION FOR AREAS OF ACTIVITY USING INDICATOR PLANTS, INSECTS, ETC.
2. APPLIED EVALUATION FOR SPECIFIC USE
 - a. AGAINST SPECIFIC PESTS
 - b. DOSAGE RESPONSE
 - c. EFFECT ON HOST OR CROP
3. TOXICOLOGICAL STUDIES
4. BIO-CHEMICAL INFORMATION
 1. METABOLISM IN ANIMALS AND PLANTS
 2. MODE OF ACTION
 3. TRANSLOCATION

Chart 3—Mass screening of compounds for basic evaluation against indicator plants, insect organisms or nematode may be used to point out agricultural areas where the candidate chemical may apply. Other laboratories may skip this procedure and evaluate compounds against specific insects, disease organisms, or in case of herbicides against specific grasses or broadleaf weeds.

Regardless of whether one or both of the above systems are used, once a promising pesticide is found it is tested against a wide number of specific pests in the group in order to determine the effect of various dosages. At this stage it is important to determine the effect of the candidate chemical on the host or crop you want to protect. Even though the chemical controls the pest in question, if it injures the crop or animal you wish to protect, it will have to be rejected.

Prior to undertaking large greenhouse or small scale field trials, preliminary toxicology tests are made to assess the danger of the chemical to the worker handling it. Usually these consist of acute oral and dermal LD 50's, that is to determine the amounts required to kill 50 per cent of the test animals. The pesticide may also be tested at this stage on laboratory animals for possible eye irritation and vapor inhalation studies. These may be concluded in the Research Stage with a 30-day feeding study to determine what effect the chemical will have on the test animal if fed in the daily diet.

Preliminary bio-chemical information may also be required at this time to determine the metabolism or chemical changes of the pesticide in plants and animals. It may be desirable to study the mode of action or what effect the chemical has on animal and plant tissue. Also if the compound is translocated within the plant.

Chart 4

SYNTHESIS
(*New Compound*)

1. SELECTING COMPOUND TO BE MADE
 - a. NEW COMPOUNDS WHOSE AGR. APPLICATION IS UNKNOWN
 - b. SYNTHESIZING COMPOUNDS RELATED TO THOSE OF KNOWN ACTIVITY:
 1. FOR MORE EFFECTIVE PESTICIDES
 2. FOR PATENT PROTECTION
2. SELECTING INITIAL CHEMICAL PROCEDURES:
(FOR PREPARING GRAM QUANTITIES)
 - a. LITERATURE SURVEY
 - b. EXPERIENCE WITH RELATED COMPOUNDS
 - c. DEVELOPING NEW METHOD

Chart 4—Synthesizing a new chemical first involves the selection of compound to be made. It may be desirable to make an entirely new compound whose agricultural application is unknown, or you may prefer to synthesize one related to those of known activity. In the first case, perhaps your aim is to uncover a new or more effective pesticide, but if you already have a promising candidate you might consider making related compounds in order to give you a better patent position.

After you decide on the compound, the next problem is to select the best way to make it in gram samples. A literature survey or your chemist's experience with related compounds may prove profitable. If these fail, a brand new method will have to be developed.

Chart 5

CHEMICAL EVALUATION

1. DETERMINING CHEMICAL & PHYSICAL PROPERTIES
2. DETERMINING STABILITY
3. FORMULATIONS
4. POSSIBILITIES FOR ANALYTICAL METHODS
5. PRELIMINARY INFORMATION ON BEHAVIOR DURING AND AFTER APPLICATION
6. DEVELOPING ANALYTICAL METHODS FOR IDENTIFYING COMPOUND AND INTERMEDIATES
7. DEVELOPING SCALE UP CHEMICAL PROCESS
(FOR MANUFACTURING OZ. to LB. QUANTITIES)

Chart 5—Chemical evaluation of the candidate material is also important if you are to make it work as a successful pesticide. Determination of the chemical and physical properties is necessary before you can prepare satisfactory formulations. If the compound is of such a nature that it cannot be stabilized at ordinary temperatures, or if it oxides or hydrolyzes too rapidly under conditions encountered in the field—it may have to be discarded. However, if the promising pesticide is stable and can be formulated, analytical methods must be found for determining amounts of residue in animals and plants.

Finally, preliminary information on the behavior of the compound during and after application must be determined. Here, you need to know if it persists or does it change to another compound in presence of air and water. Also, does its chemical property change when placed on plant or building surfaces.

After the new compound has been made you must develop analytical methods for identifying it and its intermediates.

If the compound shows promise as a pesticide you will probably require ounces or pounds of material for large greenhouse or small scale field tests. In such cases, a more efficient chemical process will likely be desired.

The types of chemicals studied will be largely decided by the company's supply position. Do they manufacture the likely intermediates or will they be dependent on rival companies for these? Needless to say, your best chance for success in this highly competitive business is to be basic in the products you sell.

Finally, after the candidate pesticide has been evaluated in the laboratory, the big question is to decide if it is good enough to send out for Field Development. With the increasing cost of Field Development no company can now afford to release mediocre compounds which may never pan out.

II. FIELD DEVELOPMENT OF PESTICIDES

Although the activities discussed here refer specifically to the American Cyanamid Company's Development Program, we feel they may be similar in many ways to programs of other basic pesticide producers who face similar problems.

Chart 6

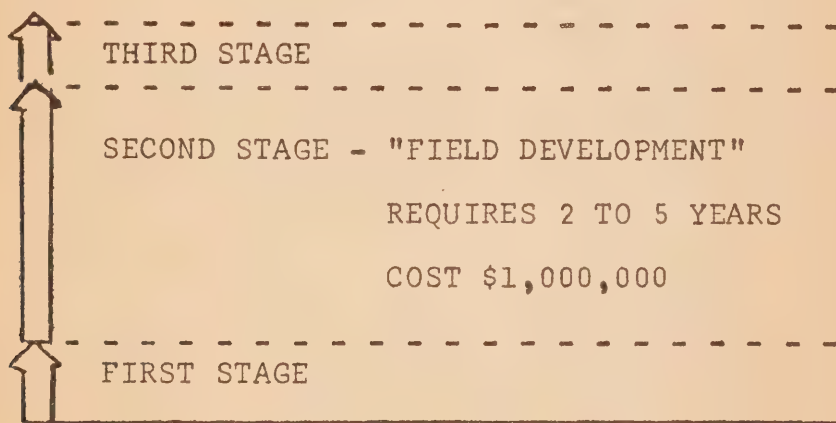


Chart 6—The field development of an Agricultural Pesticide, which we have likened to the second stage of a three stage rocket, may be the most costly and time consuming phase. The minimum time required for Field Development is two years for non-food crop uses and possibly five years or longer if the crop is to be eaten by man or animals. The average estimated minimum cost of this stage through the first food crop registration is around \$1,000,000. A wide spectrum pesticide like Malathion, which has been in commercial sales for twelve years is still requiring \$250,000 annually for continuing Field Development.

FIELD DEVELOPMENT

Chart 7

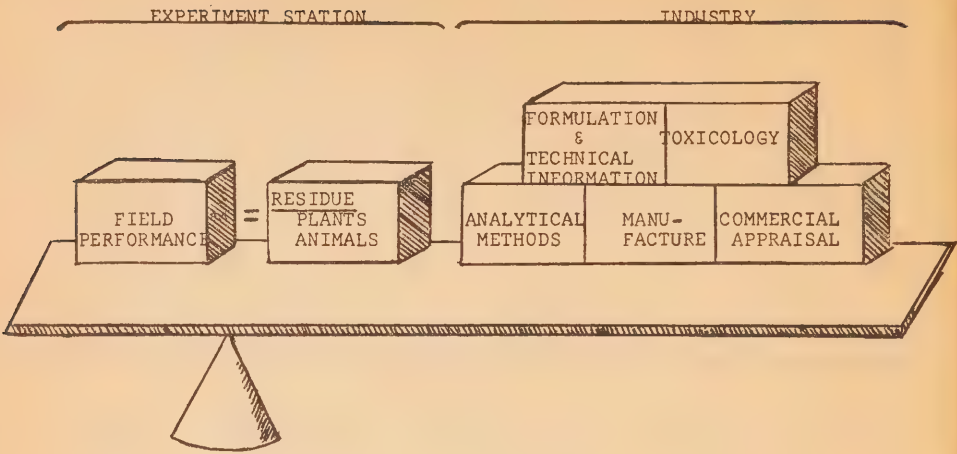


Chart 7—Shows the necessary seven segments of our *FIELD DEVELOPMENT PROGRAM*, each of which will be discussed separately. College and Federal research workers are responsible for most of the data for Field Performance as well as collecting crop samples for determining Toxic Residues in plants.

The responsibility of the remaining five categories; Formulations and Technical Information, Toxicology, Analytical Methods, Manufacturing Procedures, and Commercial Appraisal are borne almost entirely by the sponsoring company.

A well-balanced Field Development Program depends on keeping Field Performance of a pesticide in balance with the other items listed. If Field data lags in relation to the other items you may find you have acquired considerable laboratory information on a product which will never become commercial. When the opposite is true, registration and sales may be delayed until the necessary laboratory studies are complete.

Chart 8

FIELD PERFORMANCE AVERAGE \$250,000	
1. PESTS CONTROLLED	
2. MINIMUM EFFECTIVE RATES	
3. LENGTH OF CONTROL	
4. EFFECT ON QUALITY	
5. EFFECTS OF ENVIRONMENT ON PERFORMANCE	
6. COMBINATIONS WITH OTHER PESTICIDES	
7. PHYTOTOXICITY TO CROPS INVOLVED AS WELL AS VARIETAL DIFFERENCES	
8. EFFECTS OF FORMULATIONS	
9. FARMER DEMONSTRATIONS or EXPERIMENTAL SALES	

Chart 8—*FIELD PERFORMANCE*—consists in the evaluation of the new compound on many species of pests over a wide range of crops. State and Federal workers carry on the major portion of this work load estimated to cost these Government agencies around $\frac{1}{2}$ million dollars for the five-year period.

Cyanamid's average cost for maintaining technical field and supporting biological specialists during this phase—for that portion of their time devoted to one pesticide—is around \$50,000 a year, or a total of \$250,000 for the full five years. Our Animal Development Staff is responsible for investigating the use of pesticides on animals. Although they work through Experiment Stations, they also do considerable field evaluation work at Company test farms scattered throughout the United States. Here, answers are found for types of pests to be controlled, minimum effective dosage rates; length of time required for control; effect of the chemical on the quality of fruits and vegetables; such as flavor, color, appearance, and odor. Environmental factors such as temperature, moisture, and soil type are also tested for their effect on the chemical's performance. The way the compound acts in combination with other pesticides is also studied. Phytotoxicity to crops plus varietal differences are most important. Last, but certainly not least, formulations which will be used by the farmer must be examined in terms of all the above factors. For this reason it is desirable to develop an acceptable formulation as early as possible, since any drastic changes mean re-evaluating the whole field performance phase. During the last year of this program it is often desirable to test the new pesticide under farmer conditions, where timing and method of application may vary considerably from the ideal. This is usually accomplished through large scale field demonstrations or limited experimental sales.

Chart 9

<div>TOXIC RESIDUES \$100,000 to \$250,000</div>	
<ol style="list-style-type: none">1. PREVIOUS INFORMATION WILL HELP EXPERIMENT STATIONS TO DETERMINE WHEN TO EXPECT CROP RESIDUES IN FIELD.2. EXPERIMENT STATION WORKERS THEN DESIGN EQUIPMENT TO COLLECT SAMPLES WHICH WILL SHOW EFFECT OF:<ol style="list-style-type: none">a. TIMINGb. DOSAGEc. RATE OF DISAPPEARANCEd. RESIDUES AT HARVEST3. PROBLEMS OF COLLECTION AND SHIPMENT OF SAMPLES4. ANALYZING SAMPLES<ol style="list-style-type: none">a. RESIDUES OF COMPOUND ALONEb. RESIDUES OF TOXIC METABOLITES	

Chart 9—The determination of *Toxic Residues* in plants is shared almost equally by Experiment Stations and Industry. Cyanamid's average cost runs between \$100,000 and \$250,000 per product. Chemists at the originating laboratory help the Experiment Station worker to ascertain when to expect crop residues in the field by determining the effect of moisture, temperature, sunlight and soil type on the compound's stability. Knowledge of a soil pesticide's solubility will enable the field worker to judge whether or not to expect toxic symptoms on succeeding crops. Also, vapor pressure data will help estimate the chemical's volatility under varying field conditions, thereby helping the worker predict the length of time residues can be expected to remain on plants.

With a knowledge of the physical and chemical properties of the pesticide, Experiment Station workers can then design tests for collecting samples which show the effects of proper timing, dosage, rate of disappearance of the compound in plants, and residues at harvest. Analysis of dosage rates several times higher than recommended is desired in order to supply residue knowledge for situations where mistakes are made in the actual application. Also, if residues at harvest are too high the information gained from the rate of disappearance studies will help determine when the last application should be made.

The proper collection and shipment of samples is very important. Green plants and perishable fruits and vegetables must be frozen and shipped in dry ice so as to arrive at the testing laboratory before the samples thaw. Improper shipments of a highly perishable crop like strawberries could result in insufficient residue data, thereby delaying registration another year.

The job of actually analyzing samples will be shortened if the residues found on or in the plant are the same as the compound itself. However, if the

compound is systemic, an understanding of the metabolites or toxic compounds within the plant is necessary, since all crops may not metabolize the pesticide at the same rate.

Chart 10

TOXICOLOGY AVERAGE \$150,000	
1. 30 DAY FEEDING PLUS OTHER LIMITED TESTS	
2. 90 DAY FEEDING	
3. CHRONIC FEEDING—2 YEAR (RATS) 1 YEAR (DOGS)	
4. POTENTIATION	
5. METABOLISM IN ANIMALS	
6. MODE OF ACTION IN ANIMALS	
7. INDUSTRIAL HYGIENE	

Chart 10—TOXICOLOGY data are required to establish the safety of the pesticide to animals and man. The toxicology data are needed for a first registration of a pesticide on a food crop will likely amount to \$150,000. For a wide spectrum compound like Malathion, Cyanamid has already spent at least $\frac{1}{4}$ of a million dollars on toxicology, which has been matched by equal effort from the Government Agencies.

Before the first pesticide samples are sent out for field appraisal, limited tests are run in the Research Stage to assess the hazard of using the chemical to the Experiment Station workers or others. These preliminary tests are usually concluded with a 30 day feeding study to determine what effect the pesticide will have on the test animal if fed in the daily diet.

A 90 day feeding study may follow the 30 day test or it may be delayed until the Company decides that the compound will justify registration and a chronic or two year feeding study is decided. Here, the 90 day tests are used to help the toxicologist determine the (three) best feeding levels to use in the longer test.

Chronic feeding studies normally require two years to complete; two years for feeding short lived animals such as rats, and one year study on another species—usually dogs. (Both groups would start with three feeding levels plus a control, and would involve a minimum of 400 rats and 16 dogs). After the two year feeding is complete another six months may be required for examining the organs of sacrificed animals and summarizing results.

It may be necessary to determine if combinations with other pesticides result in a more toxic action than the sum of the two compounds alone.

Distribution (Fate) and Metabolism in animals may be necessary if pesticide residues are on the feed, or the animal is treated directly with the pesticide. Here, chemical changes of the compound are studied in the various animal tissue.

Mode of action studies determine the effect of the chemical on the various animal organs. Finally, before the pesticide is offered for sale, Industrial Hygiene Engineers must decide what safety precautions are to be followed in the manufacture and formulation of the compound. Safety precautions may also be suggested to growers if the compound has a high mammalian toxicity.

Chart 11

<p>FORMULATION MINIMUM \$50,000</p>		
<ol style="list-style-type: none"> 1. MUST DETERMINE PHYSICAL AND CHEMICAL PROPERTIES 2. MUST DETERMINE EFFECTS FORMULATION ON <ol style="list-style-type: none"> a. PLANTS b. ANIMALS c. EQUIPMENT 3. MUST DETERMINE EFFECT FORMULATION ON PERFORMANCE <ol style="list-style-type: none"> a. DOES IT GET TO SITE OF ACTION IN MOST EFFICIENT FORM? b. COMPATIBILITY WITH COMPLIMENTARY PESTICIDES c. STABILITY IN STORAGE d. STABILITY IN SPRAY MIXTURE e. DOES IT HAVE DESIRABLE PHYSICAL PROPERTIES? 4. IS IT AFFECTED BY EXTREMES IN TEMPERATURE? 5. DOES IT SEPARATE OR AGGREGATE IN STORAGE? 6. EASE OF APPLICATION 		

Chart 11—*FORMULATION* studies start early since a proper formulation often decides the success or the failure of a material. As mentioned previously, it is necessary that our final formulation be decided in the early Development Stage. The average cost for Formulation studies, during this stage, run at least \$50,000.

Since the properties and use of a compound determine the desired formulation, the first step is to ascertain the active pesticide's physical and chemical properties.

Then the effects of the formulation must be studied on different plants, animals as well as manufacturing and application equipment.

Next, you must determine its effects on the chemical's performance. Does it get to the site of the pest in the most efficient form? Is it compatible with complimentary pesticides? Is it stable in the spray mixture as well as in storage? Does it have desirable characteristics such as dispersability and flowability? Does it leave a proper deposit, produce a minimum of foam in the spray tank, have an agreeable odor, and leave a good spray pattern?

It is also desirable to know if extremes in temperature will affect the formulation, or does it separate or aggregate in storage.

Finally, is it easy to use or does it require special application equipment, as is the case of many commercial nematocides?

Chart 12

<p>ANALYTICAL METHODS</p> <p>AVERAGE \$200,000</p>
--

DEVELOPING ASSAY METHODS AND TECHNIQUES

1. ANALYTICAL STANDARD
2. TECHNICAL MATERIAL
3. FORMULATIONS
4. RESIDUES IN
 - CROPS
 - FRUITS
 - ANIMALS
5. METABOLISM
 - PLANTS
 - ANIMALS (HANDLED IN TOXICOLOGICAL STUDIES)
6. EQUIPMENT NEEDED (ADDITIONAL COST)

Chart 12—Developing *ANALYTICAL METHODS* requires the skill of our most highly trained chemists and is one of the most costly aspects of pesticide development. If the pesticide's application is broad and laboratory studies show the presence of metabolites the total cost may be greatly increased. The purpose here is not only to identify the pesticide chemical but to establish the presence of toxic degradation products.

Metabolism studies in crops are needed to learn the chemical changes that the pesticide undergoes. With Thimet^(R) phorate, our systemic insecticide, five metabolites were formed inside of plants, one of which was ten times more toxic to mammals than Thimet itself. Metabolism studies in animals is handled by the Toxicology group.

In the development of analytical methods one of the first steps is to prepare an analytical standard from which impurities have been removed.

With the aid of this pure material we can determine the per cent of active compound in our technical, as well as in various formulations, and for residue purposes.

Since registration may be dependent on the knowledge of residues in edible commodities we must know how to analyze the chemical if used on crops, fruits or animals.

All this assay work requires expensive equipment. For instance, the cost of key pieces of equipment for radio tracer studies will easily exceed \$100,000.

However, more important is maintaining personnel with skills to utilize this equipment.

Chart 13

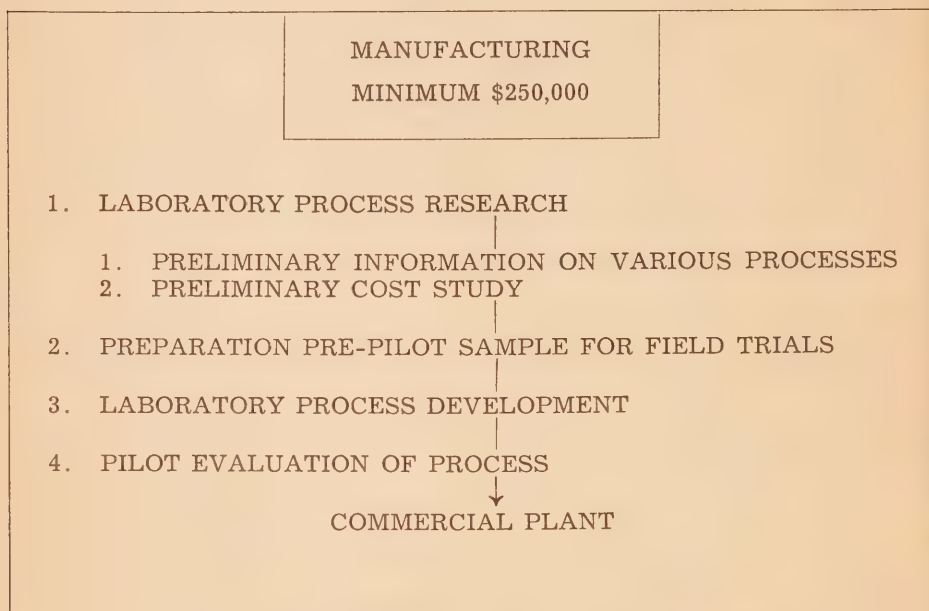


Chart 13—In the Cyanamid Company, *MANUFACTURING* or *Methods for Making the Chemical* may run from $\frac{1}{4}$ to 1 million dollars depending upon the problems involved. Here the main cost is for the needed skilled personnel and for materials—with the latter amounting to only 20 per cent of the total. We begin in the Research or early Development Stage with *Laboratory Process Research*, which gives us preliminary information on various processes for making the chemical plus some cost information. The amount of material made here is usually 10 to 15 pounds. Next, we are ready for the *Preparation of the Pre-Pilot Samples* which produces material for the first field trials. Here, the amounts produced generally range from 100 lbs. to 1,000 lbs. After our pesticide has been field tested, and we are satisfied we have a potential commercial compound we are now ready to start *Laboratory Process Development*. The purpose of this step is to select the process we plan to use commercially. Often promising pesticides are discarded here because no economical way can be found to produce them. If this stage is successful we are ready for the *Pilot Plant Stage* for evaluating the process to be used in the commercial plant. In this phase, we can produce material in amounts necessary to carry us through Experimental Sales. Cyanamid Research Chemists make use of various company installations and crews where the desired equipment is available. However, a research chemist always supervises the Pre-Pilot and Pilot Plant stages.

Chart 14

COMMERCIAL APPRAISAL

1. MARKET SURVEY
 - a. DETERMINE ACREAGE OF CROPS OR NUMBER OF ANIMALS SUSCEPTIBLE TO PESTS CONTROLLED
 - b. CONTROLS NOW BEING USED
 - c. IF NO CONTROLS AVAILABLE COULD A SUCCESSFUL PESTICIDE BE SOLD?
2. CAPITAL INVESTMENT REQUIRED
3. COST OF MANUFACTURING AND TECHNICAL SERVICE
4. PATENT PROTECTION
5. COST OF DEVELOPMENT

Chart 14—COMMERCIAL APPRAISAL of the Field Development Program is the responsibility to top management. Because of this, no price tags are placed on this category. Market analysis and patent lawyers are also used but their services vary so much with different products that an accurate cost estimate cannot be made.

Probably our first step in the Commercial Appraisal of a pesticide is to make a Market Survey. We need to determine the acreage of crops or numbers of animals which are susceptible to the pests controlled. Then, we are interested in knowing if controls are being used and how our product compares in performance and price with those being sold. Also, if no controls are available could a successful pesticide be sold?

Next, top management gets into the picture. They are interested in knowing how much capital investment will be required. Will a new plant be needed or can we use existing plant facilities? They must consider the cost of manufacturing, a likely selling price, as well as the technical service charges required to service the estimated sales. Although patents are usually applied for before Field Development commences, they are often not granted until the product is actually on the market. If the Company cannot get a patent, they may be forced to put a minimum effort into future investigations.

Costs of Development may be periodically reviewed. If they seem excessive in relation to the expected returns, Management may decide to slow down or even stop Field Development. Since Commercial companies must operate at a profit to exist, an unbalanced Development Program cannot continue indefinitely.

The final phase in the Field Development of a pesticide is the written label which must be on the outside of the commercial container if the product is offered for sale. This label is the users assurance that if he follows the specific directions as to rates, methods and timing of application the pest or pests listed will be controlled without the chemical leaving residues in the harvested crop in excess of established tolerances.

Before approving a label, the Federal Government carefully reviews existing field performance and chemical data to be sure the grower will be protected if the labeled directions are followed. As you see, labels do not just happen, they are the final result of the extensive data collected in our Field Development work.

Chart 15

NUMBER OF CYPREX^(R) DODINE TESTS AT VARIOUS RATES
IN THE U.S.A. FOR APPLE SCAB CONTROL 1956-1959

		Lbs. of CYPREX 65W/100 gal.							
		$\frac{1}{8}$	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	1	$1\frac{1}{2}$	2
1956				3		1	8	6	4
1957				3		2	9	8	4
1958			8	16		13	11	4	1
1959	3	7	14	1	11		4	1	
1960									

Chart 15—Illustrates how rates were established with CYPREX^(R) dodine, a Cyanamid fungicide, which was evaluated by our Stamford, Connecticut Laboratory in 1955 as a promising apple scab control material. In 1956, the first year of Field Development, this compound was sent in limited quantities to the principal United States apple experiment stations for the purpose of determining the effective dosage range for this use. You will note from the dosage listed horizontally at the top of the table that the greatest number of tests in 1956 were evaluated at higher rates, namely 1, $1\frac{1}{2}$ and 2 lbs. of formulated material per 100 gallons of water. In 1957, this rate pattern was repeated to confirm the 1956 results. In 1958 lower rates were tested and these were largely repeated

in 1959. By contrasting dosages first used in 1956 with those used in 1959 it can be concluded that Experiment Stations testing this material were getting effective scab control in 1959 at much lower rates than originally used in 1956.

Consequently, a Federal label was issued in 1960 for the first commercial year recommending $\frac{1}{2}$ lb. of formulated material in a protective schedule through the first cover spray. For after infection application the $\frac{3}{4}$ rate was recommended.

The first label will not end our development work with CYPREX. Future plans are to investigate lower rates, dust formulations, and to extend the using period from first cover to harvest. Besides field performance data, the label is also governed by analytical and toxicological results which can restrict the chemical's use.

We would like to repeat that a grower's best bet for using a pesticide safely is to strictly follow directions given on the label.

PART II

PROCEDURE BY CYANAMID OF CANADA LIMITED

PROCEDURE FOLLOWED IN CANADA

The development by Cyanamid of Canada Limited of a petition for registration of a pesticide begins with an assembly by Cyanamid's technical department of all research data that is available on this particular chemical product. To the extensive compilation on the research history, efficacy and toxicity of the pesticide, which was originally developed to fulfill United States Department of Agriculture requirements for registration of the product in that country, is added all pertinent research data which has already been developed in Canada by Cyanamid as a matter of routine practice.

This comprehensive assembly of technical information is then evaluated to determine the candidate pesticide's possible application in this country. This stage of procedure involves efficacy tests, including field trials to assess the product's performance under climate conditions peculiar to Canada. Such field tests are usually carried out with the co-operation of government experimental stations and universities in a variety of Canadian locations—usually eight or ten locations. Coincident with these efficacy tests, special Canadian research activity in residues is also carried out. At the same time, efficacy and residue data from northern United States areas—such as fruit growing regions in New York and Washington states—are also studied and incorporated in the research information that will eventually form part of the petition.

As you are aware from previous statements, all toxicological information is submitted as an integral part of the petition. Cyanamid of Canada has available to it the complete data on toxicity relating to the candidate pesticide which has been developed previously in the United States because conditions involving toxicity do not usually vary as a result of geographical factors. This data could ordinarily be considered adequate for the purposes of the Canadian petition. However, Cyanamid of Canada supplements these comprehensive toxicological studies with its own research, bearing on the toxicity of the candidate pesticide in relation to:

- I. Canadian atmospheric conditions which might produce significant effects not encountered in United States field experience;
- II. Canadian farming methods;
- III. Canadian application practices, especially with reference to the types of equipment ordinarily used in the various growing sections of the country.

The major part of the special Canadian studies in toxicity with regard to the candidate pesticide comprises an assessment of the potential misuse consequences which might be peculiar to Canadian farming. This assessment can form the basis for the development of special precautions for Canada relative to the use of the product.

As a result of this special supplementary Canadian data relating particularly to toxicity, labels and product literature are developed for use in this country. If the candidate pesticide is to be marketed through normal trade channels and identified to the consumer as a Cyanamid of Canada product, then the label will contain the following features:

- I. It will be bilingual;
- II. The list of precautions will be a list developed for Canada;
- III. The claims will be according to Canadian registration.

The Petition for Canadian Registration

When the petition is submitted, it represents an extensive assembly of information pertinent to the pesticide for which registration is sought. As we have set out in detail in the previous pages, the petition contains everything that Cyanamid knows about the product that is relevant to the efficacy claims for which registration is sought plus all the data, based on U.S. and Canadian experience, on the toxicity of the product.

This basic petition or first presentation of studies on the efficacy and toxicity of a new pesticide is presented in the fullest possible detail with all supporting references and frequently with extensive relevant appendices. This basic petition is intended to be used, following registration of the candidate pesticide, as a reference file whose information and results will be referred to in subsequent petitions for registration of the pesticide for additional uses. Registration for additional uses is sought when the pesticide proves itself to be efficacious in further applications than those set out in the basic petition. These subsequent applications are supported with data on toxicity pertinent to the further claims that are made for the pesticide.

Following submission of the petition, meetings are held with Federal Government officials, to review and examine in detail the contents of data on efficacy and toxicity. These meetings are carried on in an atmosphere of frankness, based on mutual confidence which leads to a conclusion arrived at with full understanding of all data contained in the petition.

Continuing Studies of a Pesticide After Registration

Every pesticide marketed by Cyanamid of Canada is constantly surveyed in its performance and use for new information relevant to the toxicity of the product. All data gathered as a result of these studies is quickly reported to the Federal authorities and widely distributed by Cyanamid of Canada. Periodic bulletins and, frequently, booklets, which contain the latest information on a pesticide's toxicity are distributed to doctors, hospitals, public health departments at all levels, poison control centres, and to all other points where responsible judgment dictates that they should be made available.

As part of the continuing program of studies in toxicity, Cyanamid carries on a program of exploratory and control research on all its pesticide products. A most important activity in this field is the investigation of all reported cases of misuse of the product and of accidents involving misuse. These incidents are examined closely and reports issued, based on thorough studies.

These continuing studies yield a flow of information which generally enables Cyanamid of Canada to alter or restate its list of precautions governing the use of an individual pesticide. In all cases the first precautions set out in the basic petition are extreme in their emphasis of safety factors.

Throughout the distribution channels—to formulators, dealers, applicators and to the farmer whose fields, crops or animals are treated with a Cyanamid pesticide—Cyanamid of Canada maintains a flow of the latest information governing the safe use of its pesticides.

Although a pesticide may perform satisfactorily in one or several formulations, new types of formulations are constantly explored by Cyanamid with the object of discovering new compounds which favourably affect the toxicity of the product in use: make it safer for the consumer to handle and apply. the object of discovering new compounds which favorably affect the toxicity in a particular pesticide include the effects of potentiation in livestock which may be treated by one pesticide while incidentally exposed to the residue of another. Reports in this area are also released to whatever outlets there are for this kind of information.

Livestock studies in Canada are maintained by Cyanamid of Canada and comprise a program whereby a particular pesticide is tested even in large

pure-bred animals to extend knowledge of toxic effects of residues. These studies are carried on by veterinarians working with representatives of the Technical Services Section of Cyanamid of Canada's Agricultural Products Department. Second and later generations are studied in a process that is naturally comprehensive and slow, in the case of larger animals, to yield the data sought on the toxicity of a pesticide compound. It should be noted that all research costs in this area have increased at least 60 per cent in the last five years. Therefore, this section of Cyanamid's continuing study of pesticide toxicity can be described as a major expense item in the cost-of-production of a Cyanamid pesticide.

Cyanamid's toxicity studies include development of data on antidotes to lessen fatalities and injuries resulting from accidental exposure to organophosphate poisoning. This information is distributed in Canada wherever it can be of possible use. Noteworthy in this connection is the fact that Cyanamid research in this direction is most advanced. Our knowledge of the types of antidotes and their use in medical treatment has in many cases been adopted as basic information by public health authorities. The Province of Ontario is an example of an area where data supplied by Cyanamid of Canada forms the standard reference for the treatment of organo-phosphate poisoning.

Industrial Hygiene as a Factor in Greater Safety.

Because many of Cyanamid's pesticide products reach the consumer or applicator in formulations produced by companies other than Cyanamid, constant vigilance is maintained over formulating conditions. The Industrial Hygiene Section of Cyanamid of Canada's Technical Services has developed specifications governing the handling of its toxic materials, standards for adequate equipment, ventilation and safe procedures. Prospective and established formulators are inspected to see that these specifications and standards are met, and can be adhered to at all times.

The object of this program of inspection is to reduce as much as possible the occupational health hazards present in the formulation process. A formulator's location is also examined, because exhaust fumes in areas of high population density can be a potential cause of danger. Therefore, a formulator must be satisfactorily located before being approved to process Cyanamid pesticides. The experience of Cyanamid's Industrial Hygiene Section is relied on by many formulators for guidance in determining whether claims by workers under the Workmen's Compensation Act are valid or are based on psychosomatic reactions to odors, particularly of the pesticide compounds.

Conclusion

The information contained in the foregoing pages is supplied by Cyanamid of Canada Limited in an effort to co-operate with the Special Committee on Food and Drugs in its studies. Complete frankness has governed the presentation of this material in all its details. If further development of any section of this Reference Paper will aid the Special Committee, Cyanamid of Canada is prepared to provide more information in greater detail.

Submitted to the Special
Committee on Food and Drugs,
by Cyanamid of Canada Limited,
November 21, 1963.

HOUSE OF COMMONS
First Session—Twenty-sixth Parliament
1963

SPECIAL COMMITTEE
ON
FOOD AND DRUGS
Chairman: Mr. HARRY HARLEY

MINUTES OF PROCEEDINGS AND EVIDENCE

No. 14

TUESDAY, NOVEMBER 26, 1963

WITNESSES:

Representing *Canadian Agricultural Chemicals Association*: Mr. H. S. Smith, President; Mr. D. K. Jackson, Immediate Past President; Mr. J. A. Enns, Treasurer; Mr. L. A. Miller, Vice-President, and Mr. Michel Chevalier, General Manager.

ROGER DUHAMEL, F.R.S.C.
QUEEN'S PRINTER AND CONTROLLER OF STATIONERY
OTTAWA, 1963

SPECIAL COMMITTEE ON FOOD AND DRUGS

Chairman: Harry Harley

Vice-Chairman: Mr. Rodger Mitchell

and Messrs.

Armstrong	Fairweather	Nesbitt
Asselin (<i>Richmond-</i>	Francis	Orlikow
<i>Wolfe</i>)	Gauthier	Otto
Baldwin	Gelber	Roxburgh
Cashin	Howe (<i>Hamilton South</i>)	Rynard
Casselman (Mrs.)	Jorgenson	Whelan
Côté (<i>Longueuil</i>)	Macaluso	Willoughby.—24.
Enns	Marcoux	

(Quorum 8)

Gabrielle Savard,
Clerk of the Committee.

NOTE: Mr. Francis replaced Mr. Pennell prior to the 15th meeting.

THURSDAY, November 21, 1963.

Ordered,—That the name of Mr. Francis be substituted for that of Mr. Pennell on the Special Committee on Food and Drugs.

Attest.

LÉON-J. RAYMOND,
The Clerk of the House.

MINUTES OF PROCEEDINGS

TUESDAY, November 26, 1963.

(15)

The Special Committee on Food and Drugs met this day at 9:40 a.m. The Chairman, Mr. Harry C. Harley, presided.

Members present: Messrs. Armstrong, Baldwin, Côté (*Longueuil*), Enns, Harley, Jorgenson, Marcoux, Mitchell, Nesbitt, Otto, Roxburgh, Rynard, Whelan, Willoughby,—(14).

In attendance: Representing Canadian Agricultural Chemical Association: Messrs. H. S. Smith, President of C.A.C.A. and General Manager of Chemagro Limited, of Toronto; D. K. Jackson, Immediate Past President, C.A.C.A., and Market Research Manager, Monsanto Canada Limited, of Montreal; Mr. J. A. Enns, Treasurer, C.A.C.A., and Manager, Biochemicals Dupont of Canada Ltd., of Montreal; Mr. L. A. Miller, Vice-President of C.A.C.A. and Senior Technologist, Shell Oil Co. of Canada, Ltd., of Toronto; and Mr. Michel Chevalier, General Manager, C.A.C.A., of Montreal.

The Chairman introduced Mr. Smith, President of Canadian Agricultural Chemicals Association, to the Committee.

Mr. Smith introduced his associates and proceeded to read a brief, copies of which were already in the hands of the Members. At the conclusion, he expressed the desire to discuss three particular points, namely: 1) labelling; 2) poison control centres; and 3) the National Committee on Pesticide Use in Agriculture (NCPUA).

He was questioned on the brief. Mr. Chevalier assisted him in answering questions pertaining to the organization of the Association, its purpose, functions and accomplishments.

During the course of his presentation, Mr. Chevalier tabled, for the information of the Committee, a list of the members of C.A.C.A. and the Chairman read some of the names listed.

Mr. Smith and his associates answered further questions regarding the use and misuse of pesticides, and related matters.

The three topics mentioned above were elaborated on by Mr. Chevalier on labelling, Mr. Jackson on poison control centres, and Mr. Miller on N.C.P.U.A. and the part played by Canadian Agricultural Chemicals Association in that organization.

The officials of C.A.C.A. assured the Committee of the full cooperation of their association with the Food and Drug Directorate and the other federal departments.

The Chairman thanked the officials of C.A.C.A. for their presentation.

Dr. Rynard moved, seconded by Mr. Willoughby,

Agreed,—That the list of members of the C.A.C.A., mentioned above, be printed as an appendix to this day's proceedings. (*See Appendix "A"*).

On motion of Dr. Rynard, seconded by Mr. Marcoux,

Agreed,—That a paper mentioned at the last meeting by Dr. Robert White-Stevens on the effects of pesticides on human health, by Dr. Wayland J. Hayes, Jr., M.D., Ph.D., be printed as an appendix to this day's proceedings. (See *Appendix "B"*).

The Chairman announced that the Provincial Entomologist of Ontario will appear before the Committee on the 10th of December.

At 12:15 p.m. the Committee adjourned to 9:30 a.m. Thursday, November 28th.

Gabrielle Savard,
Clerk of the Committee.

EVIDENCE

TUESDAY, November 26, 1963.

The CHAIRMAN: Gentlemen, we now have a quorum. Your Chairman apologizes for being somewhat late, but it was unavoidable. He did, however, ask Mr. Mitchell to go on with the meeting, should the Chairman be too late.

We have with us this morning the Canadian Agricultural Chemicals Association. They have been kind enough to forward their brief in the form of a letter which I think we have all now received.

I therefore introduce to you Mr. H. S. Smith, the president of the Canadian Agricultural Chemicals Association who will make his remarks at this time.

Mr. H. S. SMITH (*President, Canadian Agricultural Chemicals Association*): Mr. Chairman and members of the committee: I would like first of all to introduce our general manager, Mr. Michel Chevalier, Mr. Keith Jackson, our past president; Mr. Lloyd Miller, our first vice president, and Mr. John Enns, our treasurer.

Mr. MITCHELL: Where is your head office located?

Mr. SMITH: At Montreal.

Mr. MITCHELL: It does not say so in your brief. That is why I asked.

The CHAIRMAN: Is it the wish of the committee that the brief be read? Would you like Mr Smith to read it?

Mr. ENNS: Mr. Chairman, I think we would like to have it read.

The CHAIRMAN: I think the feeling is that you should read it, Mr. Smith.

Mr. SMITH: Gentlemen, I shall now read the brief which we have submitted, as follows:

Canadian Agricultural Chemicals Association

November 20, 1963.

Dr. Harry Harley, M.P.,
Chairman,
Special Committee on Food and Drugs,
Parliament of Canada,
Ottawa, Ontario.

Dear Sir,

The Canadian Agricultural Chemicals Association welcomes the opportunity of appearing before this special committee, on the matter of pesticides and their use in Canada.

The association is made up of the manufacturers and formulators who are responsible for the production and primary distribution of almost all the pesticides used in this country. Because of the comparatively limited Canadian market and the world-wide base of the chemical industry, the industry in Canada is supported to a very great degree in research and primary production of chemicals by parent companies and principals outside the country.

We have studied the proceedings of the committee with close attention, and present the following general remarks prior to our appearance before you on November 26th, when we will be able to comment on the industry and its activities, and any points previously brought before the committee which you might wish to discuss.

All decisions concerning the materials that our civilization uses to sustain and advance life must be focused on one fact of human existence: Man's increasing fertility on a planet that places very definite limits on its ability to support any one species.

Some time during 1962, the earth's population passed the three billion mark—a total achieved over hundreds of centuries. Within the next 35 years, we are told, this total will probably be doubled. And with it, the expansion of human needs—food, clothing, shelter, health care—will grow proportionately, because human wants are expanding even faster than human needs.

This is generally known as the population explosion that we hear so much about.

Primitive man satisfied his simple wants by reaching out for nature's bounty. He ate whatever stimulated his nose and tongue and his mistakes were often catastrophic.

Modern man is driven by much more complex needs and desires. His demands stimulate the inventiveness that contrives the new materials, the new methods and the abundant foods. But, as man continues the search for better things, he also encounters new perils and new hazards. He sets new values on human life and human health, far beyond those of past centuries. And as he probes, he is confronted with a choice: does he continue the search for better things or does he pull back, afraid of the hazards of discovery?

There are some who are deeply concerned by the risks. From time to time intelligent, articulate critics argue that every step by man away from "nature's way" is fraught with peril. The more sympathetic plead for caution and the more skeptical invoke a nostalgia for a simpler world that society could never hope to restore.

Man's progress has been based on his increasing control over his environment, and few modern developments have been more effective in helping man shape his environment than pesticide chemicals. The gains have not always been easy or without cost and man has had to learn not only how to use his discoveries fruitfully, but also how to use them safely.

In the most critical area of all—the growing, harvesting and preparation of food—almost complete safety has been achieved. There are no cases on record of human fatalities resulting from the proper use of agricultural chemicals. Human error remains the most frustrating factor to be overcome in making chemicals thoroughly safe to manufacture, distribute and use.

Public enlightenment, sensible legislation and governmental vigilance play vital roles in safeguarding the public health. And an additional force for safety is the industry's regard for its own good name; its integrity is a great assurance to the public. The development of a new pesticide

In Canada and the United States, five basic steps are involved in the development of a new pesticide preparatory to its registration under the Pest Control Products Act. They are:

1. Synthesis; preliminary screening; market analysis.

2. Advanced screening; preparation of laboratory quantities; patent activities; preliminary process and cost studies.
3. Preparation of larger quantities; development of analytical methods; field testing; subacute toxicity studies; formulation studies; residual studies.
4. Final choice of the most promising compound; pilot plant facilities; finalization of process; development of commercial production; accelerated field testing; additional field testing; residue; toxicity and pharmacology studies.
5. Submission of complete data for registration.

A cost, sometimes as high as \$3 million, is incurred in developing a candidate pesticide to ensure its efficiency and safety in use.

Safe and efficient use of pesticides

The industry works closely with the food and drug directorate and the occupational health division of the Department of National Health and Welfare, and with the plant products division and the research branch of the Canada Department of Agriculture.

The association maintains close liaison, as well, with federal and provincial government committees to ensure maximum effectiveness and safety in the use of pesticides. In this way the pesticides industry recognizes its responsibilities in providing a means for Canadian agriculture to improve substantially the quality and volume of Canadian farm produce.

The association supports the government fully in its administration and enforcement of the provisions of the Pest Control Products Act and the Food and Drug Act, bearing in mind the following objectives:

1. The health of the consumer, in Canada, and in our export markets;
2. Safety in application, as regards the applicator, nearby crops, and contamination which might affect public health;
3. Effectiveness—in contributing to agricultural production from the standpoint of high quality and volume, and low cost.

Conclusions

1. As the means of food production become increasingly complex, interdependent and effective, the possibility of overlapping and contradictory legislation arises, with the confusion and inefficiency which such a situation inevitably brings with it. For agricultural pesticides, the present clean-cut control under the Pest Control Products Act and the Food and Drug Act has proven most effective. This is particularly important for Canadian agriculture, which is a major component of a small economy.
2. The recognized responsibilities of the provinces in use and farmer education may require broader action at the provincial level as the application of pesticides becomes more widespread and more complex. Initiative and coordination by the federal government is useful here and is evident in many instances, particularly in the activities of the National Committee on Pesticides Use in Agriculture.
3. The need for education in safe use at the farmer and the spray operator level is a real one and one in which the industry has been active in co-operation with government for many years.
4. The need for continuing prosecution as required at the offending level, in cases of misuse, sets a good example in the interests of proper use and instills confidence in the public at large.

5. The essential government regulation of pesticides has been met for many years by means of the Pest Control Products Act and the Food and Drug Act. The process of regulation is an evolving one and has been and will in the future be dictated and modified by changes in pesticidal compounds, uses and use procedure.
6. The industry is conscious that the public at large must be made more fully aware of pesticides from the standpoint of health benefits, hazards, safe use and economic value. In co-operation with governments and various groups concerned, the Canadian Agricultural Chemicals Association and its members wish to continue to advance this concept.

Respectfully submitted,

H. S. SMITH,
President.

Mr. Chairman, that is our complete brief.

We would like the opportunity of discussing three further points: labelling; poison control centres, and the N.C.P.U.A.

Mr. ENNS (*Portage-Neepawa*): Mr. Chairman, I think it would be very useful to have a little more information on what the association is and how loosely, firmly or directly it is connected. It is my understanding that the companies which these men represent are competitors.

Mr. MICHEL CHEVALIER (*General Manager, Canadian Agricultural Chemicals Association*): Mr. Chairman, the association is made up of some 55 manufacturers, formulators and associate members which are suppliers to the industry; they work together on all matters in which co-operative efforts can be useful. An example of this is discussion with the various government departments at federal and provincial levels. The association often can do a lot of things which individual companies cannot do. An example of this is developing liaison between provincial spray calendar committees and industry. The association plays an important role in these matters.

Also, there is a national committee for pesticide use in agriculture, and it is easier for the government to ask for representation from the industry through the association than it is to have to go to the various companies for these representations.

Mr. Chairman, there are many other ways in which the association works co-operatively together. However, we must remember this is a competitive economy and they are all competing for the sale of their products.

If I may, Mr. Chairman, I would like to table a list of members of the association.

Mr. ENNS (*Portage-Neepawa*): Are there producers or formulators who are not members of your association? I assume membership is voluntary?

Mr. CHEVALIER: Yes; there are some. All the major and the majority of the middle level volume manufacturers are members. We estimate that between 85 and 90 per cent of the total volume of pesticides sold in this country go through the members of this association.

Mr. ENNS (*Portage-Neepawa*): As an association, do you undertake any educational campaign whereby you inform the public in respect of the proper uses? This is one of the big problems we run up against. In your brief you say that the need for education is great in the proper use of these things. As an association do you take any responsibility in this?

Mr. CHEVALIER: The association is just about ten years old. It started out in quite a narrow area of liaison with federal agencies; it has literally evolved from there over a number of years to the point where we now have brochures, pamphlets, attendance by representatives at agricultural meetings, and membership in technical committees at the provincial level where agricultural information is developed.

We have co-ordinated relationships in respect of developing policy and implementation of such policy with the Ontario Water Resources Commission; in the last four or five years also with the product committee of the Quebec department of agriculture, spray calendar committees in other provinces, and so on. The association is going through a new phase of expansion and is going to be much more active as an association in the educational field. For example, we will be called upon to provide background information for the dealer training and dealer schools in the province of Manitoba, and in various other provinces. So, more and more the association is getting into this area.

Mr. ENNS (*Portage-Neepawa*): Thank you.

The CHAIRMAN: I think it would help the committee if, later on, we had a motion that we actually append the list showing the members of this association. I will pass this list around. However, I might read out some of the names on it, if you wish, so that you would have the names of some of the companies which are included: Canadian Hoechst Limited, Cyanamid of Canada Limited, Dow Chemical of Canada Limited, Dupont of Canada Limited, Eli Lilly and Company (Canada) Limited, Imperial Oil Limited, Monsanto Canada Limited, Pennsalt Chemicals of Canada Limited, Shell Canada Limited, Standard Chemical Limited, Union Carbide Canada Limited, and there are many other companies listed.

Mr. CHEVALIER: Would it be helpful if the management functions of the delegates who are here were mentioned to the committee?

Mr. Smith is general manager of Chemagro Limited; Mr. Jackson is market research director of Monsanto Canada Limited; Mr. Miller is senior technologist of Shell Canada Limited; and Mr. Enns is the product manager, biochemicals, of Dupont of Canada Limited.

Mr. RYNARD: In paragraph 3 you say the need for education in safe use at the farmer and the spray operator level is a real one and one in which the industry has been active in co-operation with government for many years. The gentleman went on and said they are trying to show them how to spray, and so on. Can a person now go and buy a spray and have a sprayer used without there being any check on him?

Mr. JOHN ENNS (*Treasurer, Canadian Agricultural Chemicals Association*): Who?

Mr. RYNARD: Can he, as a farmer, buy a spray—whatever it is intended for; it does not matter—and go out and spray without there being any check in respect of whether or not he has the knowledge necessary for its proper use?

Mr. ENNS: Today this is so; yes. Your only guidance for using the product after you buy it is the label.

Mr. RYNARD: Therefore, there is nothing in provincial or municipal regulations which puts a brake on this matter and the prosecutions?

Mr. ENNS (*Portage-Neepawa*): Except when you market your crop.

Mr. RYNARD: Just a minute. I think this is a very weak point. If a man can go and buy it and is liable to prosecution because he uses it wrongly, why should there not be a stop put on it in the first place? A man might be educated before he buys it or have to show that he is capable of using it in the proper manner.

Mr. ENNS: This is a difficult question. He can buy a pesticide in the same way that he can go to a drugstore and buy a drug and follow the instructions in respect of its use. If he is not negligent and uses it for his own use, and according to the instructions on the label, he is not going to get into trouble. I do not really have a strong opinion on whether or not this should be prevented by legislation, because it would be extremely difficult.

Mr. SMITH: One point I might make is that the reason we bring this out is in an effort to educate these people to read the label. If they use the material according to the label, they are not going to get into trouble. This is all figured out before we are allowed to put it on the label. The reason for prosecution is that the people did not read the label.

Mr. RYNARD: I would say that is true, but we have to take into account human nature. All the way through in this committee concern has been expressed that somebody can use these things and in using them do a lot of harm. I think that surely somewhere along the line there should be some legislation, or something, so we would know the man is fully informed. Perhaps he might not be able to read. In any event, he should be instructed concerning the danger of misuse before he is allowed to go out and use this spray. I think this is a very important point from the point of view of this committee.

Mr. CHEVALIER: I believe we all agree that this is an extremely valid point and one which is before the various members of the industry quite constantly. However, there is a factor in agriculture which tends to mitigate the situation a little. In the old days the farmer did produce and sell to the consumer. Now, in the case of milk, for example, and dairy produce, in many cases all or part of it will go to a creamery, or some other processing station. It is important to the farmers in the area that some other farmer does not contaminate his own product and thereby contaminate the product of his next door neighbour. This is an example of the interdependence of agriculture today; this is something of which the agricultural associations, the dairymen's association, and the federal and provincial departments of agriculture are very much aware. Not only in the field of pesticides, but all the way through the piece in agriculture they are developing a great deal more pressure to make the farmer aware that he may be carrying out a good practice, but his next door neighbour may not be. There is a kind of mutual discipline developing in farming areas which is helping the situation which you mention, sir.

Mr. WHELAN: I might make one comment on this. I think we will find, if we check all the things one can buy in a drugstore, even in the form of rat poison and other things—with all due respect to this honourable profession—anyone can walk in and buy it. These things are in the home and can be abused by anyone. There are a great many similar articles; you can even buy a gun and there is no guarantee how it will be used—I think this has been shown by the events in the last few days. I think people in farming have a responsibility; this is as great as any other way of life and is a profession, too.

Mr. MITCHELL: Is your association made up of manufacturers or wholesalers, or both?

Mr. SMITH: Predominantly manufacturers and formulators. We do not all sell directly to the farmer; in fact, we do so only in very few cases. We sell either to distributors or dealers. In other words, you must have a distribution chain so that when something is required, it is available to the man who needs it.

Mr. MITCHELL: It was mentioned that one of the witnesses here today is a representative of Shell Oil. Would he be in the category of a manufacturer, wholesaler and retailer if these were sold from Shell stations?

Mr. L. A. MILLER (*First Vice-President, Canadian Agricultural Chemicals Association*): In the Shell organization, the Shell Oil Company in the United States is the manufacturer of a number of poisonous insecticidal products. We, in Canada, will produce those products and formulate them into the products which can be used by the Canadian farmer in the form of powder, dust, concentrates, or oil solutions, or something like that. In addition to our own basic chemical, we formulate and sell competitively with Dupont, Monsanto, or anybody else. We will also sell different basic products to formulators such as Dupont, Monsanto, or anyone else who in turn will formulate their own basic products and sell in competition to us. In addition to that, we can produce a basic product other than those in which Shell Oil in the United States is basic in, and we in turn will formulate those products.

I will give you the example of D.D.T. We can purchase basic D.D.T. on the open market, and sell it in competition to other members of this association. In addition to that aspect of our operation, we will formulate products for other companies who will place their label on that product. In other words, this is another way we have of getting more products onto the market. Many people who market these products are not in a position to formulate, so they must get someone who can formulate the basic product for them which they in turn can market.

Mr. MITCHELL: But you do retail under your own label?

Mr. MILLER: Yes, We have our own branded product.

Mr. MITCHELL: You could be manufacturer, jobber and retailer?

Mr. MILLER: Yes.

Mr. JORGENSEN: I would like to return to the point raised by Dr. Rynard. In this brief and others I believe it was indicated that if they are properly used according to the directions on the label, these pesticides are relatively safe. Is this the general idea?

Mr. SMITH: That is correct.

Mr. JORGENSEN: Could you tell me how many farmers using chemicals demonstrate abuse in the use of these chemicals? What farmer will use twice the amount he needs to use in order to control the pest? I know farmers fairly well. I think the experience is that the reverse is quite true; that is, they are not using too much of a chemical; the tendency is not to use enough.

Mr. SMITH: That is correct.

Mr. JORGENSEN: Where does the suggestion come in that the farmer is abusing the use of chemicals? I think, if you look for abuse, that you will find it in respect of persons like myself who have a small garden plot. I use it indiscriminately there. I do not bother to read the directions; but in the case of a farmer, he is careful to follow the instructions and not increase his cost any more than is necessary.

Mr. SMITH: The word "abuse" here is not intended to mean exactly what has been attributed to it. There are one or two points which perhaps need to be examined. It is not only the label which has the directions; in whichever province the person happens to live, the spray calendar will also have the directions. Very often on our label we have a direction not to use 14 days before harvest, and an abuse which very often occurs is that he may decide to use it seven days before harvest. The compound may be a rather persistent compound and have a longer residual action than others. If he is going to use a product 14 days within the date of harvest, he should not use this product. This is the abuse we are trying to bring out.

Mr. CHEVALIER: Products are coming on the market all the time which are more effective. This is the aim of the industry all the way through the piece; that is, to make them more effective and easier to use. There is a continuous process of something new coming along which is better. This is where the very intensive and, we think, effective agricultural representative and agronom system in the provinces comes into play. Very few farmers use pesticides today who are not in close touch with their agronom who, in turn, is in close touch with his provincial department for spray calendar information. It is not only the cost of the pesticide which will cause a person to use a bit less; more and more he is getting to know that quality in a product is an essential element in getting it sold, whether it be grain, produce for market, or for home consumption, or what have you.

Mr. JORGENSEN: You are under the impression that through the agricultural representatives is the best way of getting the information to the farmer?

Mr. CHEVALIER: It certainly is the most effective over-all way.

Mr. JORGENSEN: In the province of Manitoba we have what is known as the weed control act. Weed control inspectors are very active, not only in the field of weed control, but in pesticide control as well. We find they are a great deal more effective than the agricultural representatives who are too busy to be running around to every farmyard. But, in respect of these weed inspectors, it is their sole responsibility; they are out working with these people.

Mr. CHEVALIER: This is an aspect of specialization in agricultural extension which is coming more to the fore. For example, in the area which I know personally, the fruit belt area in the province of Quebec, the advisory service of the provincial department of agriculture for orchards is an excellent one. These people are on call at any time to come out and advise you. They will come to your orchard several times a year and talk to you. No good orchardist would take a step unless he talked to his specialist in the field of orchard cultivation. In the case of Manitoba, the problem would be more in respect of grain, and therefore these weed people perhaps are more important. However, the provinces are developing these specialist advisers to quite a degree.

Mr. MILLER: In Ontario there are fruit and vegetable specialists who operate in the same category as the weed specialists whom you mentioned in Manitoba.

Also, I would like to comment on your remarks and state that I am in agreement with you when you suggest that the normal household user of pesticides probably is the greater offender in respect of misuse and abuse. It was suggested that the farmer is not the irresponsible person which a great many people are prone to believe. In general he is a very professional man. The chances of the farmer actually abusing or misusing the chemicals we market are far less than in the case of the backyard gardener type of person.

Mr. NESBITT: Mr. Chairman, at our meetings we have had a great many witnesses before us, and I think most of us might agree that an attempt to control the use of these various compounds in the hands of individuals, for use in the household and the home garden, administratively would be very difficult. It would be difficult to educate everybody. Perhaps we could improve the labels and put more skulls and crossbones on cans, but so far as commercial sprayers are concerned, do the witnesses think those who do spraying on a commercial basis for farmers, and perhaps municipalities, should not only be licensed, but actually have to take some course of instruction.

Last year I employed someone to do some spraying on fruit trees. Frankly, they did not know what they were doing, because it did not have very much effect. I rather suspect they had not had proper instructions as to how much to use. With the number of trees I had, it did not bother me; but it could be very damaging financially through causing considerable losses to producers of various crops if too little were used.

On the other hand, we have had evidence that excessive use of the sprays, particularly those which are very stable, may have some very unpleasant effects over the years.

Do you not think it might be advisable to have commercial sprayers given some course of instruction in respect of the use of these things?

Mr. MILLER: I must refer you to the situation as it obtains in Ontario, because this is the situation with which I am most familiar. The Canadian Agricultural Chemicals Association, in co-operation with the Ontario department of agriculture and the Ontario department of health annually sponsors a spray operators school. It is quite true at the moment there is no requirement to license custom applicators, as we know it. There is a licensing requirement in the field of pest control involving people who go around fumigating homes, and so on.

Mr. NESBITT: Those are people who use sprays such as hydrogen cyanide.

Mr. MILLER: Yes. When we started this spray operators school we felt that maybe in the neighbourhood of 40 or 50 people might be interested. To our utter astonishment four or five hundred people showed up at the Canadian National exhibition grounds to participate in this school. Sometimes at these schools we do have members of our own association who are specialists in one field or another participate. The Ontario department of health will have people there such as Dr. Mastromatteo who is a specialist in the field of toxicology, and other persons who are specialists in the use of many of the spraying machines. It is a very comprehensive course we undertake with this group of people. The indication is if it is going to continue to develop the same interest, we may have to prolong the school for perhaps a couple of days.

Getting back to your question of whether or not we believe these custom applicators should be licensed, I would not like to comment one way or the other, because such would require a great deal of education on the part of the applicator. In Ontario they are going to register custom applicators and I would take this as an indication of it being a prelude to eventual licensing.

Mr. ROXBURGH: Before I address the Chair, I would like to ask our friend here, Mr. Nesbitt, when he made this statement about having somebody spray the fruit trees, whether he means the quantity used was too much or too little. What did you have in mind?

Mr. NESBITT: In this particular case, perhaps not enough, or not the right ingredients.

Mr. ROXBURGH: The timing of the operation is more important than the quantity of the spray. I have had about 30 years experience in this. The spraying is of no value whatsoever if it is not timed properly.

Mr. NESBITT: That would be part of the education.

Mr. ROXBURGH: I wanted to make this clear. I would like to ask whether the members of the Canadian Agricultural Chemicals Association pay a certain amount of money into the association?

Mr. SMITH: Yes.

Mr. ROXBURGH: What is this used for?

Mr. SMITH: Education.

Mr. ROXBURGH: Does the amount of the fee vary according to the size of the company? If it is worth \$10 million, does it pay a little more than the one worth \$50,000?

Mr. CHEVALIER: The fees are scheduled in relation to the volume of production sales in the agricultural chemical field. We have three different levels of membership fee, which run up to \$500.

Mr. ROXBURGH: I was just wondering. I think Mr. Smith mentioned the fact that \$3 million has been spent in developing a new pesticide or insecticide. Is that by an individual company itself?

Mr. SMITH: Yes.

Mr. ROXBURGH: It could be Imperial Oil, Shell, or any company.

Mr. SMITH: That would be per product too.

Mr. ROXBURGH: We have had a number of witnesses, as you know, since the beginning of the fall session. One of the factors, which has been brought up here today by Mr. Nesbitt and others, as well as yourselves, is that the small gardener, or the person using something in the home, and so on, could do more damage. What is the attitude of the association in respect of labelling? As you must be aware, there are a great many products on which the labels or illustrations fall very short of what I think should be required.

I mentioned earlier a death in my own family and the case of another person who was near death. This was caused by the use of the same product, namely carbon tetrachloride which, as you know, is used for grain as well as for cleaning and so on in the home. In this particular case the skull and crossbones were very small, and there was nothing to point out that these ingredients, if not used properly, would cause severe damage to the liver if inhaled.

Would one of our witnesses advise what the attitude of the association is to ensure that there will be more detailed information to draw to the person's mind the severity of improper use of these products. As you know, there are numerous occasions in which people do inhale a bit of these sprays and we say: oh well, a little bit is not going to hurt us. People using these products get careless in the same way as those who use dynamite or anything else. However, I feel sure in both cases that if the proper precautions were placed on the product the results of their misuse would not have been nearly as serious. As you know, damage to the liver is continuous in this instance, if you do live.

What is your information in respect of the information presently on these products and what do you think could be done to make it safer in the hands of inexperienced people?

The CHAIRMAN: Mr. Roxburgh, before we proceed with your question, may I say that Mr. Smith mentioned he wished to bring out a few points in that connection.

Before you proceed I would like to ask if there are any further questions on the particular subject on which questions have been put up until now.

Mr. ROXBURGH: If I may bring up one further point, Mr. Chairman, before you do that. Mr. Jorgenson, who has left the committee, did bring up the question about the farmer and the costs involved, and he discussed it at some length.

I think, Mr. Chairman, it has been pretty well established that farmers are actually more intelligent than a lot of people think, if I can put it that way.

However, there was one point I wanted to bring out. Farmers are very very interested in the cost of these insecticides and there have been many occasions when our organization has had to step in to impress upon certain farmers the necessity of applying the proper amount required.

In our own particular area and within our organization the cost of insecticides and pesticides range from \$2,000 for the small farm to practically \$10,000 a year in the case of large farms. People who are using these products to that extent are certainly versed in what they are doing. At least, I know they are in our particular section, and I do not think the farmers in Norfolk county are any brighter than any place else.

Mr. WILLOUGHBY: Mr. Chairman, as has been brought out at our different committee meetings it is obvious that our problem concerns the use of these products by the smaller user, such as the gardener. As we know, these people sometimes use these products indiscriminately. It is obvious you cannot legislate against people who are inclined to use things indiscriminately. It is as difficult to legislate against these people as it is in the misuse of fire arms, driving at high speeds and so on.

Education is our main hope, and what Mr. Miller said is very encouraging. As you will recall, he mentioned that people are turning out by the hundreds to improve their knowledge through these courses and so on. I think the way to overcome these problems is to hit the pocketbook; you can do that by fining them for abuses. We have heard evidence in that respect in our previous meetings. Mention was made of the province of Manitoba, where milk samples were taken from every producer and the same was checked out. In these cases, farmers were penalized if there was too much insecticide material in the milk.

Is there a similar check in respect of vegetables and fruit products being marketed.

Mr. L. A. MILLER (*First Vice President, Canadian Agricultural Chemicals Association*): There are continuous checks in this connection; the food and drug directorate have inspectors all the way from Victoria to St. John's, Newfoundland, who are picking up samples of products in the super markets and so on. They are extremely busy. I do not know how many centres they have, but they all do these residue analyses. It is my understanding that the number of centres they have is not adequate to police the whole country. However, where there have been residues in excess of the established tolerances products have been seized in the past. There is a continual check going on 12 months of the year. Of course, in addition to that I believe some of the western provinces have established regional laboratories or provincial laboratories. But, as I say, there is a continuous check on the products. This is so, I know, in Alberta and Saskatchewan for a certainty but I am not sure whether it obtains in Manitoba, British Columbia and so on. For instance, the dairy industry in Alberta is continually policing the dairy products in that province. This is assisted through federal grants to the provinces.

Mr. WILLOUGHBY: But are the fruit stalls which sell garden produce in the open market covered? As you know, the town's people go down to the local market and buy food from these food stalls.

Mr. SMITH: This is part of the normal checking procedure of the food and drug directorate. They will go into any place where food is marketed, whether it be in the super market, the fruit stalls or even in a wayside stand.

The CHAIRMAN: I may say that the officials from the food and drug directorate will be back on Thursday; that will be a very good question to put to them.

Mr. RYNARD: Mr. Chairman, there are a couple of points I would like to bring up at this time.

I had a little problem with spraying as well; perhaps members of parliament get sprayed more than ordinary people. In the case I have in mind, a fellow made a shortcut and did the spraying in two operations in view of the

fact he was a little late getting around to it. He should have used three applications. As he made only two applications he used a stronger spray and he advised not to leave anything in the area until after a good rain came.

I think it is apparent that there is damage to the human being caused by the use of these sprays.

I think Mr. Roxburgh made a very good point when he said they should be licensed. As you recall, Mr. Roxburgh said there is a time to do this and if these operations were carried out at the wrong time there would be a great economic loss to the grower. I think an added reason for having those operators well trained is so that they will know what they are doing. It has been made very clear that we should check on these people, not only from the medical standpoint as a result of poisoning but also from the economical standpoint.

Mr. CÔTÉ (*Longueuil*): I have a question to put in respect of the function of your association. Why was it felt that there was a need to form such an association; and, is it any benefit to the companies or to the consumers concerned?

Mr. SMITH: We had mutual problems which indicated a need for this type of association. There were problems involved in the instructions given at spray schools and there were other problems which arose when governmental bodies wished to talk over some problem which concerned our industry. They were unable to call everyone of us in to discuss these matters and, as a result, our association often has been called in in respect of different matters. The substance of the talks would then be relayed to the individual members of our association. There are problems on both sides, as you must realize, which cannot always be legislated, and this is a further reason for the need of an association.

Mr. CÔTÉ (*Longueuil*): Does your association have anything to do with price control?

Mr. SMITH: No, it does not.

Mr. CÔTÉ (*Longueuil*): Are you happy in the control exercised by the food and drug branch of the federal government?

Mr. SMITH: Yes.

Mr. CÔTÉ (*Longueuil*): And, you have no recommendation to make in that regard?

Mr. CHEVALIER: I do not think that in an overall process such as this one can ever be completely happy. The process of the development, use and control of pesticides is one which has evolved over the years; this is a case where industry and government have to keep on their toes. This is a changing picture and as soon as we get happy then there is something wrong. We have to be unhappy all the time; we must make sure that we deliver the best product possible, and that we have made known all the facts. On the other hand, the government must know that the product is properly controlled. As this is a changing picture we have always to be watching it.

Mr. CÔTÉ (*Longueuil*): Does your association make certain representations through the different governments or does each individual company have to deal with the government? What I am getting at is this: do you speak on behalf of all the other companies when there is something in respect of bylaws or to other things involved?

Mr. ENNS: I think it should be clarified that anything which has to do with products as such which an individual company manufactures and registers is purely the concern of that company in all aspects of producing, pricing and

how that particular product is used. The only reason that we have an association is to handle areas where there is a common ground, for instance, in respect of safety. Sometimes in the case of safety there are areas of individual involvement and then it is the responsibility of the individual company to make a submission in such cases and, from the product point of view, the companies are entirely responsible for their own individual activity and also their relationship with the Department of Agriculture.

Mr. CÔTÉ (*Longueuil*): Are there any rules which the companies have to follow in order to be members of the association?

Mr. ENNS: Do you mean rules in so far as membership is concerned?

Mr. CÔTÉ (*Longueuil*): Yes.

Mr. ENNS: We do have association bylaws, yes but, in general, they refer to the areas of common ground. But, the areas of common ground do not include individual products; they do not include pricing or any of those things.

Mr. WHELAN: You have mentioned in your brief the amount of research which has gone into a product and I think this alone points up the fact that farmers are not going to abuse these sprays because of the cost factor involved. As you know, they have to pay for them and, as a result, they are very conscious of the cost and the use to which these products are put. Even in my own area, people who cannot read English—and I am referring to the new Canadians—want to know what is on the particular product in question, they will make it their business to find out from someone what is set out on the product. They want to make very sure they are not wasting this material.

Does your company or any of your associates have any laboratory facilities to check residues in crops or food stuffs?

Mr. SMITH: In order to get a product registered all companies must submit to the food and drug directorate the complete data and residues which would be found on a given crop planted or treated at different dates. This is not necessarily carried out in Canada.

Mr. WHELAN: Then, your companies are constantly checking for residues?

Mr. SMITH: Yes.

Mr. WHELAN: Am I correct in saying that your company probably would sell direct to a great number of the large processing companies?

Mr. SMITH: Some companies do and others sell through distributors.

Mr. WHELAN: In our area 90 per cent or higher of processed farm products is under control of a spray program. These sprays are used and are under the control of highly skilled people who manage these spray programs for the crops. There would be nothing to be concerned about in that respect. And, this concerns all food for human consumption. I come from one of the more highly concentrated areas of spraying and food processing, namely south western Ontario. Is it your opinion that what I have said is true?

Mr. SMITH: It is true.

The CHAIRMAN: Perhaps at this time we should ask Mr. Smith to elaborate on the three points he wanted to discuss further.

Mr. ROXBURGH: Before you do that, Mr. Chairman, I would like to make one small comment.

Dr. Rynard is absolutely correct in what he said in respect of jobbers. But, I want to point out that jobbers are generally concerned with those who have a half dozen apple trees in their backyard; they cannot afford a small unit, and perhaps they have a job removed from their home. As I say, they may have an acre of trees and they get someone to come in and carry out this operation

for them. These people, themselves, know nothing about the proper procedures to be used and the jobber, as well, knows nothing about it. As I say, I think Dr. Rynard is absolutely correct. But, from the commercial angle, the grower's livelihood depends on the proper use and timing of all these operations. He knows if these operations are not carried out in such a way that he no longer will be in business. For instance, if it is necessary that they hire an airplane to come in and carry out an operation they tell the pilot who is doing the job when to come around and also the amount to use when he does.

I just wanted to comment in that connection, Mr. Chairman.

Mr. BALDWIN: Mr. Chairman, I arrived here rather late. There is a question I wanted to ask, if it already has not been put.

Have you or any of your associates been following the proceedings conducted by Senator Ribicoff in the subcommittee in the United States, which has been dealing with this question and, if so, have you any comments on the proposals obtaining in the bill which was submitted to that subcommittee in respect of new methods of labelling and so on. As you know, the bill includes another issue with which we in Canada are not involved. However, it is my understanding that this bill makes some very new departures in respect of the methods of labelling, and I thought you might wish to comment on their views in this respect.

The CHAIRMAN: Mr. Baldwin, that was one of the matters Mr. Smith was going to discuss.

Mr. CHEVALIER: I think the last question which was put and also the one raised by Mr. Roxburgh is in the area of one of the topics we wanted to bring out: this has to do with the labelling, labelling design and container standards which are probably as important or more important for the household user than for the commercial user or farmer.

As has been mentioned here this morning, if the farmer wants to stay in business and carry on and develop he is going to find out what is on that label even if he is a new Canadian. But, as you say, we are mostly concerned with the household user; the Canadian Association of Consumers brought up some excellent points when they appeared before your committee recently. You may rest assured that this question of labelling, label design, container standards and so on, are subjects which are before the individual members of this association continuously. In the main, we think we do a pretty good job and that there is a healthy tension between the manufacturers and the administrators of the Pest Control Products Act who approve these kinds of things in these areas.

Nevertheless, the problem is getting more complex because there are many more of these products coming on the market for home use, and we feel now, as in industry in the over-all sense, apart from the individual companies who are individually concerned, that as an industry we should be looking at this in the over-all sense. Now, there are various ways of doing this.

We feel that it may be difficult to administer more detailed legislation than we have now about how labels shall be designed. This, in a sense, is our reaction to the proposed bill that is before the United States Congress. When you get to the question of label design you are almost in the area of the arts and psychology. What you are trying to do is to get the housewife who picks up this aerosol container all of a sudden to take a look at it and to read it. You know that this is only going to take up to 30 seconds of her time and it is necessary to reduce it to that period of reading. She should be led into the meat of the situation; you cannot have it too long because she will not read it and you cannot have it too short because there will not be enough information to enable her to get the gist of it. You have to think in terms of typography, colour or headings, and you have to bring her down to the sentence which is

going to make her understand what she is using. As you must be aware, it is an extremely complex problem to get a first class label for household use, thinking in terms of all the criteria you are dealing with.

Now, this can work, we believe, very effectively through, let us call it, a system of standards and review, which might well be worked out through the co-operation of the government departments concerned on a permissive basis with the Canadian standards association, ourselves, the consumers, and the farm organizations. Of course, we must not forget the packaging association because they are in the picture, as well as all the other various over-all interests and, as a result of this we should spend the necessary time and effort to continuously meet this problem as new situations arise.

We do not know how these processes would be set up but we would recommend that this committee look into this kind of an approach to the problem.

I mentioned earlier the complexities of label design; we also feel that the standards of containers could bear looking at. Some of the containers are excellent; others not so good. It is very important that we have a minimum standard from the standpoint of the fit on the container itself, and so forth. The shape of the container has to be taken into consideration in order that the label will be properly fitted to it, and so on, for the purposes required. We feel this aspect of the problem could well be covered under the same process that I have described for the labelling situation.

I do not know whether or not that has clarified the two questions which were asked.

MR. ROXBURGH: Although I will admit the attitude or feeling of the different witnesses possibly has been a little out, when we first started this we did go into the label situation; as I say, this fact was brought before us. Mention was made of the fact that if something informative was used on the package so that it would bring it with force to the public's attention it would result in very low sales of their product. If I might say so, 100 per cent of the committee did not go along with that idea. Have you any comments to make on that?

MR. MILLER: I would say, sir, that we are all very ethical people in this organization and we would not sacrifice public health for a dollar. I believe that would be the feeling of the association; certainly, it is my own personal feeling. It is very difficult for me to believe that anyone would have made that statement.

MR. ROXBURGH: I think if you would look through the minutes you would note that this has been intimated at least. I would not say a direct statement was made to this effect. Their attitude has been somewhat different and, as it appeared to be, I thought I should put that to you, as you represent the people who manufacture these products.

MR. MILLER: This is not so.

MR. ENNS: It is not so.

MR. BALDWIN: To refer back again to the matter I raised earlier, I hope I am not oversimplifying it when I say that most of the main suggestions contained in Mr. Ribicoff's proposed bill were to the effect that there should be a uniform government label placed on certain containers holding certain types of commodities within the range we have been discussing and that until this is done the food shall not be sold. Am I oversimplifying that?

MR. SMITH: Mr. Baldwin, I think we are under that same kind of regulation at the moment. Under the Pest Control Products Act the authorities take a very predominant part in how big or how little the label shall be or how

we place the information in respect of any poisonous substance we turn out. On this they are insistent. We do not get our products registered unless we conform to certain set regulations.

Mr. BALDWIN: I was wondering if there was a distinction. I have not been able to get the particulars of the American bill, but it was my understanding that the intent of the bill was that there had to be a type of label which would be, in effect, a government label, which would be placed on the can or the container.

Mr. SMITH: This will depend on the type of substance you have. As you know, there are compounds which are sold for agricultural use which are not allowed to get on the household market.

Mr. BALDWIN: I would not say I was accepting it; it does raise the issue that if the government did that they would be guaranteeing, in effect, the safety of the commodity. I am not saying I bought it, but I am asking for your comment.

Mr. CHEVALIER: The United States system is not exactly comparable to ours in many different ways. I do not think we could comment aye or nay in respect of this particular aspect of the Ribicoff proposal. In a sense it is that different levels of danger or dose would have a different type or sort of government stamp or mark on it, and people would get to learn about it. This is one way of doing it. It has drawbacks and good points. In this kind of thing you get a lot of different approaches to the question which should be looked at, but in the process I have described a minute ago, there was one aspect Mr. Roxburgh made a query on and I would like to say a word about it. The pragmatic or business approach of a corporation selling pesticides, first of all, is that they know that these things are essential to the production of food, and for other purposes in civilization today; we do not have to hide behind anything. They are not for pragmatic reasons, apart from humanistic reasons, going to jeopardize an essential market—you might say a market for an essential product—by trying to push things through one way or another; it just is not in the cards and does not happen. This is the pragmatic answer to your question.

Mr. ROXBURGH: We are glad to know that.

Mr. MITCHELL: Mr. Chairman, my question is along the line of labelling, which I believe we are discussing now. I believe you stated this is a voluntary association. Therefore, there may be plenty of chemical producers, manufacturers and processors who are not in your association. Getting back to the question of legislation regarding labelling of particularly domestic pesticides, would this be possible with your association, bearing in mind that those outside of your association would have to come in under the same legislation?

Mr. CHEVALIER: There is, of course, what we consider very effective legislation right now. The question is, should this legislation be extended, and how can it be extended?

Mr. MITCHELL: I am thinking of the various products which can be emphasized as being dangerous when used under certain circumstances, or in certain procedures, not necessarily at certain times, because that does not apply to the householder.

Mr. CHEVALIER: Now, under the Pest Control Products Act, from the standpoint of registrations in food and drugs, and from the standpoint of the product as it is used, there is regulation of producers in this field. There are several hundred producers in this field—four or five hundred—who register one or another type of product. Our own membership is around 50. Despite the fact

that we represent around 90 per cent of the total volume, there are other smaller manufacturers who will have one product or another, and naturally the rules are the same for everybody.

Mr. MITCHELL: You still have not answered whether this would be possible, or satisfactory to your association.

Mr. CHEVALIER: To extend the regulations?

Mr. MITCHELL: To make them more rigid and more readable in respect of the dangers to the users. I am just speaking of the domestic market when I say this.

Mr. CHEVALIER: We are not legislators and are not experts in this field; but, to the extent one can regulate this kind of thing—for example, labels—we are in favour of it. At the present time we feel the situation is well under control, but in the area of the criteria I mentioned before, for example, the psychology of the label, although it is difficult to legislate in respect of the psychology of a label, I think in the first instance it becomes a matter of getting the message across, but as it is not always the same message, you cannot have an exact formula; however, you can have certain standards, and we feel these standards can be effectively and quickly raised by the suggestion we have here. In respect of the various groups looking at this and in the event that some legislation seems advisable in one aspect or another, we would be glad to accept it.

Mr. MILLER: If a label can be designed or a better container built that will in effect make the product safer to use, then this association supports that type of progress.

Mr. MITCHELL: Being a member of the pharmacy profession, I think you are conscious of the fact that certain of our prescriptions have to be marketed in certain shaped bottles, regardless of the label or anything else.

Mr. SMITH: If you are shipping material out in drums or in five gallon cans, it would be difficult to do this.

Mr. MITCHELL: I was referring to products purchased by the housewife.

The CHAIRMAN: There are two or more matters which the witnesses wish to bring up. One is the matter of the poison control centre.

Mr. WHELAN: In respect of the containers, in the brief of the Canadian Consumers, it was stated they were worried about some of these materials dripping on their fingers and the residue getting into one's system. I believe we heard evidence that the medical profession uses this same type of container—which I believe contained D.D.T.—for painting on the body and it was proven it caused no harm. Does the container warrant as much consideration as a lot of people say it does?

Mr. MILLER: Many of the products which contain D.D.T. are not nearly as toxic when applied dermally as some of the organophosphates. I believe the type of container which would allow spillage where organophosphate pesticides are involved is a far more serious thing than where spillage of a D.D.T. type of insecticide is concerned. Some of these chemicals get into the system much faster than others and are more toxic. So, anything we can do to mitigate the spillage, of course we would welcome as progress in this regard.

Mr. WHELAN: In respect of a commercial or farm operator taking 15 or 20 minutes or half an hour in filling his tank, generally when they are doing this they are reading the label on the can. They do this every time they fill it. I have noticed this when someone else might figure they were wasting their time; actually they are studying this thing. In our area we have found that they are anxious to learn and be kept up to date on everything in order to do a proper job.

Mr. SMITH: Mr. Jackson will speak to you in respect of poison control centres.

Mr. JACKSON: We would like to bring to your attention a brief which was submitted by the Canadian Agricultural Chemicals Association on October 17, 1962, to the Royal Commission on Health Services. This brief dealt with accidental poisoning and poison control centres. In our brief and in our conclusions we said:

The problem of accidental poisoning for all poisonous substances manufactured by industry as a whole in Canada is of the magnitude of some 12,000 cases a year for hospitalized treatments, and many thousands more for outpatient and home treatments.

These involve all chemicals and not only pesticides. I believe you have some evidence in respect of the number of cases which might be attributed to pesticides.

Our second conclusion is:

It is estimated that the volume of accidental poisoning will double in a very few years as a result of expanding usage and product lines.

Our third conclusion is:

Various hospitals across Canada are presently designated as poison control centres, but these are fundamentally ineffective due to inadequate staff and equipment, insufficient up to date data, ill-defined jurisdiction and a lack of standard operating procedures.

The fourth conclusion is:

The food and drug directorate of the Department of National Health and Welfare, though presently co-ordinating poison control measures in Canada is unable to function adequately in this connection due to lack of staff, facilities, equipment and funds.

So, we recommended:

1. The establishment of a main information centre at the food and drug directorate of the Department of National Health and Welfare, with expanded staff and facilities for more efficient cataloguing and disseminating of data to officially recognized poison control centres.
2. The establishment of an efficient and uniform system of reporting toxicological data by all manufacturers and distributors co-ordinated by the food and drug directorate.
3. The establishment of fully equipped and adequately staffed poison control centres at a few leading hospitals with nationally known telephone numbers fully publicized to the medical profession.
4. The establishment of minimum standards for designation as a poison control centre in connection with staff, documentation and consulting physicians on call.

I might add that since that time I believe considerably more effort has gone into this area and that some of these things are much improved from the early situations.

Mr. CHEVALIER: If I might add to this, we are fully aware of the jurisdictional problems between the federal and provincial governments on hospital matters. What we find now, in a sense, with the majority of the hospitals is that they like to be able to say that they have a poison control centre. I guess it has a sort of extra appeal. We feel that this is terribly dangerous, because any poison control centre really is not a poison control centre if it

does not provide 24 hour service, and does not have up to date information and equipment. These are more dangerous than they would be if they did not exist at all. Sometimes in these cases of poisoning you want information back in half an hour, and if you start at some hospital and finally reach to one with the answer, you may be too late.

As the general overseeing or administration of hospitals is considered to be a provincial affair, we recognize the difficulty of the federal government in this area. However, poisonous substances, or virtually poisonous substances are merchandised and licensed on a national basis, and we feel that as the source for the gathering of information, which incidentally should be uniform as between various industries concerned, we should report through a uniform system together with the chemical specialties, or any other manufacturing industries of potentially poisonous substances, so that the whole system is uniform. This is difficult to establish between a whole spectrum of industries, and so forth, all through the piece. We feel the logical place to get down to it is at Ottawa in the Department of National Health and Welfare where, under certain difficulties, we think they are doing a very good job.

As a second stage, if the federal authorities would consider the establishment of minimum standards for poison control centres across the country, it would mean that the hospitals would have to spend a few dollars to qualify as a minimum standard poison control centre, federally approved, and automatically the medical profession would know which were the poison control centres having all the facts, and which did not have all the facts. Gradually, I think, the others would lose interest in being designated as poison control centres. In this way we might get around the matter of provincial and federal control.

Mr. ROXBURGH: Should legislation be brought in? Would you suggest legislation be brought in to control this?

Mr. CHEVALIER: Whether or not this has to be done by legislation is a question; it possibly could be done by a standard being established by the Department of National Health and Welfare who would decide that so far as they are concerned, this is what a poison control centre should consist of, and we would certainly approve these. I do not think it would be necessary to have legislation, but it might be.

Mr. ROXBURGH: I think we have been misinformed on this, and I am very pleased we have had this discussion here. It had been suggested there were poison control centres at practically every hospital. There is a member of this committee, who is not here today, whose son was taken to one of these hospitals and they did not have the requirements. Personally, I certainly am pleased you brought this up; I am sure it is an eye opener to all of us.

Mr. SMITH: They should have a medical staff there, too, because sometimes the antidote might be an agent which is a very dangerous one by itself.

Mr. CÔTÉ (*Longueuil*): In your brief I notice that you seem to blame everybody, the organizations and the poison control centres at the hospitals; but do you not think you should take some steps so that these accidents do not occur?

Mr. CHEVALIER: There is no blame attached to any hospital administration. We know of the difficulties the hospital administrations labour under from the standpoint of budgets. I do not think there is blame attached to any particular agency. It is just the fact that we live in a federal-provincial country and the responsibility is a shared one. All we suggest now is that because all of civilization is becoming so much more complex, and the use of potentially poisonous substances, not only in our own field, but all the way through the piece, is expanding at a tremendous rate, we must take the bull by the horns

and develop a working system in this regard. At this time we feel the leadership of the federal government in establishing these permissive poison control centre standards would be a very effective first step. Also we would feel that if the federal government could provide more resources to the information centre operation here, which they have already done to a degree—there has been a tremendous improvement over the past year—this would be another very important step.

Thirdly, we feel that all industries which produce potentially poisonous substances must co-operate very closely and that we have to hone down—you might say create—the very best system of reporting so that our information goes in immediately to the information centre and is standardized so that this information gets to the cardex systems of the local poison control centres and is well advertised. In this way gradually you will build up an experience in respect of symptoms of various types of complex poisoning which, for example, might have been caused by two or three different chemicals. In this way the specialists who are backing up these poison control centres will have at their fingertips this sort of experience from past cases.

Mr. CÔTÉ (*Longueuil*): But do you not think the companies should try to do something to prevent these accidents?

Mr. SMITH: It is impossible to completely do away with accidents.

Mr. ENNS: Accidents will always happen, no matter how good we are at preventing them and we must be in a position to handle them effectively.

Mr. CÔTÉ (*Longueuil*): But do you feel the companies can do anything else to prevent accidents?

Mr. ENNS: I am sure there always will be accidents regardless of preventive measures.

Mr. CHEVALIER: It is in the field of education that we and the government have to continue to develop. It goes all the way through right down to the spraying schools, the specialists of the Department of Agriculture who advise the farmer, and the labelling system. At the end of the line, however, there will always be a need for the poison control centre to act as a sort of backstop.

Mr. MILLER: I think the members of the medical profession would agree that most of the accidents involve very small children who cannot read the label. I think you will find in virtually every case that one of the first cautions in bold type some place is "keep out of reach of children".

Mr. CÔTÉ (*Longueuil*): Maybe in a few years we will find that more harm is done to human bodies by absorbing these residues all the time.

Mr. MILLER: This is a possibility I suppose; but the food and drug directorate—the medical and biochemical staff—tell us this is not the case.

Mr. WILLOUGHBY: This poison control centre is an extremely important thing. I would like to know what system is now in effect to notify these different set-ups throughout the country in respect of what the new products are, their poisonous effect, and the information in respect of treatment. There must be some system, because I know these poison control centres have this information. Where does this come from?

Mr. JACKSON: From the food and drug directorate. In respect of our own industry, the food and drug directorate has the information. Where processes are not controlled but may be potentially poisonous, it is a matter of developing liaison between the manufacturer, the government and the food and drug directorate. Some trade marks might slip through because there is no need to supply registration. The industry does supply information direct to the poison control centres on occasion.

Mr. CHEVALIER: Three or four years ago we distributed a clinical memorandum on poisons which had been made up by the United States food and drug people. We distributed this to all poison control centres in Canada. There is now a new book published in the last two or three months and we are considering distributing it to all the poison control centres. The people I have spoken to in poison control centres say this is a very useful book. I was speaking to Dr. Hillman the other day. She is the pediatrician in charge of the out-patients division of the Montreal Children's hospital. She said: "When are you getting the next copy of this?". Incidentally, one of the most knowledgeable persons in the field of poison control today as regards children particularly is Dr. Hillman. She has a much deeper knowledge of the detail of this than we have and on a much broader basis because she is concerned with all poisons.

Mr. WILLOUGHBY: But there is no circular being sent to these centres. I realize these books are available. Is there any circulating of these new products before the booklet comes out?

Mr. JACKSON: The great majority of the products fortunately are covered by this information centre of the food and drug directorate which we think has been very effective in the past within the limits of its resources. These resources have expanded over the past year, and it is much more effective than it was in the past year. I would prefer to have a representative of the department itself describe in detail to you the process they have of getting the information from the outside which they send out to the provinces. I understand they send it to the provinces who in turn distribute it to the hospitals; so there is an extra link there.

Mr. MARCOUX: Do the individual companies, or does your association, contribute financially to this including the poison control centres? Would it not be desirable that a small percentage of the gross revenue coming to the companies be given to combat the ill effects.

Mr. JACKSON: There are hundreds of millions of dollars of potentially poisonous chemicals which are distributed in Canada every year. Of that amount, this industry was responsible for about \$37 million or \$38 million last year.

The question is whether or not one small segment of the total area of manufacturing production in the field of potential poisons should be contributing funds to poison control centres. If the poison control centre system were narrowed down so we had only a few really effective poison control centres I feel the industry as a whole would be in a much better position to evaluate the situation. But, if industry now contributed to 40 or 50 control centres, in any hospitals you want to name across the country, it would be a terribly expensive proposition and would not improve the situation at all.

Mr. CHEVALIER: May I make one comment in that connection; companies do contribute financially in developing the information on these materials which they submit to the food and drug people and, as you know, there is quite a cost involved in the accumulation of the necessary data.

Mr. MARCOUX: Do you contribute in any way to the education of our trained personnel; I am referring to technical aid, foundations, grants, scholarships and so on? As you know, many companies do give scholarships and grants to specialists in different fields.

Mr. JACKSON; I am sure there are funds made available.

Mr. ENNS: There are funds made available through grants to universities but largely because this basic work is done in the United States this occurs in the United States rather than Canada. To the best of my knowledge, I cannot quote a specific instance where such funds are made available to poison control centres in Canada.

Mr. WHELAN: You are referring to research?

Mr. ENNS: Basic research.

Mr. WHELAN: Mr. Marcoux was referring to specialists who work in these centres.

Mr. ENNS: I believe this is done in the United States.

Mr. WHELAN: But not in Canada?

Mr. ENNS: No.

Mr. MARCOUX: Do you not think perhaps it would be desirable that this sort of thing should be undertaken in Canada?

Mr. ENNS: Possibly so.

Mr. RYNARD: Mr. Chairman, answers have been given to a number of my questions. I have only a few comments to make at this time.

I do not see any point in the federal government setting up federal poison centres because these poison centres have to come right down to the level of the little hospital in the community where these things may occur. It is my opinion that the information required must get out to that small community; the only thing you require is a place where that knowledge is assembled and it can be despatched right away. As you know, your hospitals are under the provincial government and, because of that, you cannot enter that field. As I say, this information must come to the general practitioner, or the people in those little hospitals or communities where the persons will be taken.

Mr. CHEVALIER: But, in our opinion it should start with the federal department. We suggest that it be assembled there.

Mr. RYNARD: Yes, but the information must get out to the little hospitals where they need such information. That is where the doctors are doing the work.

Mr. CHEVALIER: One of the problems we feel is present in this case is that the information goes out to all the hospitals in the country and these hospitals do not have the time or the money in many cases to keep the cards up to date. We are not going to give names here this morning. But, they are not on a 24-hour basis. When a person who looks after the file goes home at 5 o'clock it creates a great deal of difficulty, as he is the only one who knows this particular file. When files are not dutifully kept, as is so often the case, only one person can handle them. As a result, time is lost by the doctor who goes to the small hospital where there is a poison control centre, when he could have phoned through to the Sick Children's Hospital in Toronto or some other place.

Mr. RYNARD: You mentioned the Sick Children's Hospital in Toronto. You must realize you have to set that up under your Ontario Hospital Commission.

Mr. CHEVALIER: Yes.

Mr. RYNARD: So, you would be able to do the same thing in connection with a smaller hospital. As you know, they are all under the Ontario Hospital Commission in Ontario.

Mr. CHEVALIER: But do you think this is practical? You can extend this as much as you like but it is really a matter of resources and money. The question is whether you should have poison control centres in, say, 20 hospitals in the province of Ontario of an acceptable standard or whether you only need one.

Mr. RYNARD: But your laboratories are on 24 hour call and surely the person in charge of those centres can take the information. I think you are going to get so much duplication that you will not know where you are going; whereas if there is one place which is responsible and the doctor in that hospital can get the information he can start to work on it right away.

Mr. CHEVALIER: It is our feeling that the number of hospitals designated as poison control centres should be determined only by certain standards. These standards should require a complete and well kept up-to-date set of cardex files and a good spectrum of specialists backed up on a 24 hour basis for any case or telephone call which comes in. We should have these medical specialists and a good spectrum of scientific specialists, who are on a 24-hour a day basis. If a small regional hospital in some small town can maintain this type of standard, fine, but if they cannot they should not be designated as a poison control centre.

Mr. RYNARD: I would say that is up to the Ontario Hospital Commission; it is up to them whether or not they have facilities because they inspect these places regularly.

Mr. CHEVALIER: This is the problem we brought up in respect of federal-provincial jurisdiction and, as a Quebecker, I am aware of federal-provincial jurisdictional matters. But, at the present time there are hospitals which are designated as poison control centres which do not have sufficient resources or material to cover all the cases that might come before them.

Mr. RYNARD: Again, that is up to the Ontario Hospital Commission to decide.

Mr. CÔTÉ (*Longueuil*): Mention was made about antidotes. What do you suggest in the case of products which have no antidotes? What is the good of the poison control centre if there are no antidotes for certain poisoning.

Mr. CHEVALIER: It is not really our function to get into that area; however, there are treatments in many cases where there is not an antidote. For example, you could flush out the stomach if there is not an antidote. In some cases this should be done and in other cases it should not. So, it is a matter of diagnosis and treatment rather than poison and the antidote. In some cases there is an antidote and in other cases there is not.

Mr. CÔTÉ (*Longueuil*): When you do not have an antidote you do not need one? Is that what you are saying?

Mr. CHEVALIER: No. Mr. Chairman, I think this is beyond our terms of reference.

The CHAIRMAN: Mr. Côté, Mr. Chevalier feels this is a problem for the medical profession.

Mr. MILLER: I would say at one time in our deliberations in the C.A.C.A.—and I think this is a live issue—we felt that maybe two or three major hospitals across the country would serve this particular purpose better than a number of smaller ones, and we felt further that great assistance would be given if those of us engaged in the formulation and actual labelling of our pesticides actually had on the label the phone number of these two or three hospitals so that either a mother or a father whose child had ingested this pesticide could merely pick up the telephone and phone collect; they would not even have to go to the hospital. As I say, this information would be on the label and then if problems did arise they would have this number. As they are on a 24-hour basis they would be able to obtain the information for their specialists. Personally, I cannot see that this can do anything but good, and I believe it is a very useful type of idea to pursue.

Mr. CÔTÉ (*Longueuil*): Who is going to treat the child, the father?

Mr. CHEVALIER: Well, you have a doctor in most communities, and many times a doctor who is called really does not know what to do in such cases.

Mr. CÔTÉ (*Longueuil*): I thought you were talking about the father or mother telephoning.

Mr. CHEVALIER: Well, the mother or father yes. Presumably they would first call their own doctor and the doctor himself would get in touch with the poison centre.

Mr. RYNARD: Surely it is up to the doctor to do the telephoning and not the parents.

Mr. CHEVALIER: Yes, that is quite true.

Mr. BALDWIN: My question, Mr. Chairman, arises out of an answer made by Mr. Miller to Mr. Côté, and if there are any more questions to be directed along this line of thought I will defer my question for the time being.

The CHAIRMAN: Are there any other questions in respect of poison control centres?

Mr. WHELAN: Have you any examples of good poison control centres in Canada? My area has one of the most excellent poison control centres anywhere.

Mr. CHEVALIER: There are half a dozen of them across the country which are really quite excellent. We would prefer not to mention one or two when one or two others we do not know about might be just as good.

Mr. WHELAN: I will mention one. We have one in the Hôtel-Dieu Hospital in Windsor, and we are quite proud of it. It is well staffed with doctors, ambulance crews and so on, and it has a telephone number right in the Windsor telephone directory which covers all the municipalities and is available to a quarter of a million people. This centre is manned 24 hours a day. There are four other hospitals in the area but they do not carry it out to the same extent. We are quite proud of this particular one and what they are doing. It gives everyone a feeling of safety.

Mr. CHEVALIER: Conversely I know of another city less than half the size of the Windsor area which has four hospitals, all of which are designated as poison control centres; at least three are not up to the mark, and the other one is just passable.

Dr. Rynard brought up this matter of federal-provincial jurisdiction, where the Ontario Hospital Commission is responsible for designating what the situation should be. We are very much aware of the situation and we realize it is a problem. However, we do feel that the federal jurisdiction has some role to play in making this more effective. We do think that our suggestions may have some merit but they naturally have to be reviewed and revised from the standpoint of the government looking out and us looking in. We also have to look at it from the standpoint of the provincial governments, who have their own problems, provincial organizations and hospital branches. This is not an open and shut case but we recommend this general approach be given earnest consideration.

Mr. BALDWIN: In response to a question from Mr. Côté I understood Mr. Miller to say that the food and drug people have now been able to carry out research to the extent that they can make a categorical statement to the effect that ingestion of these toxic residues does not have any effect on human life. I do not know whether or not it was his intention to make this statement but it seems to me it is contrary to what was said by the witness from the United States the other day, who indicated that sufficient time had not yet elapsed in

the process of testing and experimentation, to come to this conclusion. This witness dealt particularly with the question of fertility which was posed by Dr. Rynard, and he felt the scientific people were not able yet to rule that out. He did not say it would be affected but he indicated that sufficient time had not elapsed in what was comparatively a new industry to rule out the possibility.

Mr. MILLER: Mr. Chairman, I do not think I used the word categorically at all.

Mr. BALDWIN: No; I took that interpretation.

Mr. MILLER: I left the impression that with the knowledge the research people have at the moment, with the knowledge of toxicology based on extrapolation from research on animals, a number of competent authorities in the food and drug directorates of the United States and Canada are of the opinion that the level of tolerance that they set will not adversely affect the health of man during the lifetime of that individual, even if he were to ingest that tolerance every day of his life. In addition to this—and, I am sure you gentlemen heard the evidence or the testimony from the food and drug directorate—in addition to this particular safety factor, we cannot assume the individual is going to ingest this daily through his own lifetime and that every bit of food he consumes is going to have a toxicant in it. I am quite in agreement with the gentleman who appeared before you from the United States. I believe he said that it would be impossible for anyone at this point to state categorically that harm will not come but to the best of our ability and to the best of professional knowledge no harm will come if those legal tolerances are not overstepped.

The CHAIRMAN: Gentlemen, there was one other subject to be brought up.

Mr. SMITH: Would you like to discuss the N.C.P.U.A.?

Mr. MILLER: Mr. Chairman, I think we have pretty well covered most of the discussion in that respect but I would like to refresh hon. members' memories on one or two points.

The C.A.C.A. plays a fairly active part in activities of the National Committee on Pesticide Use in Agriculture; this committee was formed in 1961.

The N.C.P.U.A. was established for a threefold objective, to define pest problems, to co-ordinate research and to disseminate information. The committee works in four very distinct areas, in the vegetable crop area, the fruit crop area, the livestock area and cereal crop area.

Our association has one very competent individual who sits on each of those committees, and we work very closely with other members of the committee. I might say the membership is drawn from universities, the federal Department of Agriculture and the provincial departments of agriculture, along with various agricultural colleges and schools which contain extension people. I think there are some 50 or 60 members associated with this committee.

According to the deputy minister of agriculture, Dr. Barry, this committee is probably the most important agricultural committee dealing with pesticides in Canada today.

Our association would like to assure this particular committee of our active participation and co-operation in this committee.

In addition to that, we feel we should make it very clear to you gentlemen the co-operation that we extend to the federal Department of National Health and Welfare through the food and drug directorate, to the Canada Department of Agriculture, through the registrations branch and the plant products division. We find that our dealings and relationships with these groups leave very little

to be desired. We sometimes feel as though they are being unduly strict with us but at the same time we recognize the very real responsibilities that they have toward the consuming public. We would like to assure you that our interest and the interests of the various departments with which we co-operate are virtually identical in the safe production of food and fibre in Canada.

That is all I have to say, Mr. Chairman. The other technical aspects I wanted to discuss on this point have been dealt with earlier this morning.

The CHAIRMAN: Are there any further questions?

If there are no further questions, could we have a motion that the list of members of the Canadian Agricultural Chemicals Association be printed as an appendix to today's proceedings.

Mr. RYNARD: I so move.

Mr. WILLOUGHBY: I second the motion.

Motion agreed to.

The CHAIRMAN: I would like to announce to the committee that the provincial entomologist for the province of Ontario, namely Professor Goble, department of zoology, Federated Colleges of Guelph, will appear before the committee on December 10.

There is one other small point; should any member of the committee still have in their possession—and wish to dispose of it—part of a file of Cyanamid of Canada on malathion they could return it to the clerk of the committee and she will see that it gets back to the company.

Also, during our last meeting there was some discussion of a paper by Dr. Whelan Hayes on the effect of pesticides on human health. I now have this paper and, if it is the wish of the committee, we could print this as an appendix.

Mr. RYNARD: I so move.

Mr. MARCOUX: I second the motion.

Motion agreed to.

The CHAIRMAN: If there are no other points of discussion, we would like at this time to thank the officials of the Canadian Agricultural Chemical Association for appearing before us today. We have had a very long ranged and detailed examination which is most appreciated.

The meeting will adjourn until Thursday, when the officials of the food and drug directorate, and the legal advisor to the department, will be with us.

The meeting will be held in room 307.

APPENDIX "A"

MONTREAL, Canada, August, 1963.

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APPENDIX "B"

Paper presented at the Symposium on Nature, Man and Pesticides at the XVI International Congress of Zoology, Washington, D.C., 20-27 August 1963.

From the Toxicology Section, Technology Branch, Communicable Disease Center, Public Health Service, Department of Health, Education, and Welfare, Atlanta, Georgia.

EFFECT OF PESTICIDES ON HUMAN HEALTH

Wayland J. Hayes, Jr., M.D., Ph.D.

Mortality from Pesticides in the United States

In the United States, the death rates associated with accidental poisoning by gases and vapors and by solids and liquids have remained relatively stable since 1939, when the present method of counting was established. There was no significant change in the rate of poisoning when DDT was introduced experimentally in 1942 and commercially in 1946, nor from the introduction of a wide variety of other new pesticides beginning about 1946. The rate for all accidental poisoning in this country for the last 25 years has been about 2 per 100,000 population, a rate only about half that for comparable poisoning reported between 1900 and 1910. The foregoing statements are based on official figures from the National Office of Vital Statistics. As with much of what follows, I have discussed the statistics in detail in a report published in 1960 (8).

In different years, deaths from pesticides have accounted for 7.8% to 12.8%, or an average of about 10%, of deaths from all solid and liquid substances. The percentage is not increasing, but, in cities, the proportion tends to be lower—4.3% in one study. Fumigants contribute only a very small and relatively constant proportion of deaths caused by gases and vapors. Thus, pesticides cause an annual death rate in the United States of about 1 per 1,000,000 population.

Increases in the use of the newer pesticides, both in absolute tonnage and in relation to the older compounds, have added to their relative importance as causes of mortality. However, at least as late as 1956 and probably at present, over half the deaths associated with pesticides were caused by compounds older than DDT. Furthermore, over half the deaths are in children. These facts suggest that improvement could be made in the record if old poisons were used with the same care as new ones, and if all poisons—old and new—were stored under lock and key and then used in such a way that children could have no significant exposure to them.

The conditions of use may be just as important as the toxicity of a compound in determining its hazard. Aspirin is far less poisonous than parathion; yet it is a more important cause of death because it is so much more widely distributed and so often is stored carelessly. Children have a far greater opportunity to find and swallow a fatal dose of aspirin than any dose of parathion.

Morbidity from Pesticides in the United States

In this country all deaths must be reported, irrespective of their cause. Unfortunately, this is not true for nonfatal illnesses, including those caused by poisoning. Therefore, the number of cases of nonfatal poisoning must be estimated from the ratio of nonfatal to fatal cases found in special studies. There were from 25 to 115 nonfatal cases of poisoning for each fatal case in different years during 8 years of experience in one major city. Records of poison control centres frequently reveal a ratio much greater than 100 to 1, but less than 10%

of the cases reported to them are hospitalized, and as many as 70% show no symptoms of illness. The most accurate estimate at this time, then, is that only one of about 100 cases of significant poisoning is fatal.

In most instances poisoning in man is clinically similar to poisoning in experimental animals. Animal studies have provided much valuable information, but have their limitations. The common laboratory animals are more susceptible than man to poisoning with some compounds, but less susceptible with others. The dynamics of storage may be different in animals and man.

Time will not permit us to explore the clinical aspects of poisoning by pesticides, but we should note that at least 49 different materials have produced human cases. This number would be larger if the individual compounds or arsenic, for example, were counted separately.

Although the effect of both single and repeated doses of pesticides on people are rather well known, there can be no *a priori* assurance that at least a few people will not respond to a particular chemical with a pattern of illness different from that previously established. It is conceivable that there may be long-term effects in man even when it is impossible to demonstrate them in experimental animals during their entire lifetime. It is theoretically possible that a poison will precipitate or aggravate a bacterial or metabolic disease just as prolonged inhalation of granite dust promotes tuberculosis. Toxicologists are constantly alert to these possibilities, especially in regard to diseases of unknown origin and diseases of increasing incidence. For example, when it was suggested that DDT is a cause of poliomyelitis (4), the possibility was considered and the lack of evidence was noted. Needless to say, claims for this relationship were dropped, even from scare articles, when vaccines against poliomyelitis were developed.

No matter what the source of suspicion, it is the responsibility of professional toxicologists to explore each possibility. They have done this in the past, and the search will continue indefinitely. However, it is important to realize that there is no conclusive evidence that pesticides—old or new—are a cause of any disease except poisoning.

No discussion of mortality, or morbidity, or storage, or any other effect of chemicals is meaningful except in terms of dosage. The Committee on Pesticides of the American Medical Association (1) has reported that: "Any effects of repeated exposure would appear on the average most promptly, most frequently, most diversely, and most severely among persons whose exposure has been long and intensive." That is why some doubt is associated immediately with any case alleged to result from exposure that is trivial in comparison with what people ordinarily withstand without inconvenience.

Dependable information on tolerable—or intolerable—dosage may be obtained from study of (a) people with occupational exposure, (b) volunteers who agree to take known doses and undergo specified tests, and (c)—in the case of compounds used as drugs—patients treated for some medical condition. A number of pesticides have been studied in occupationally exposed workers, 9 in volunteers, and at least 9 in patients treated therapeutically. I have reviewed the information on dosage in a paper available from the Government Printing Office (9).

Toxicologists must keep in mind the possibility that the clinical effects of one compound may be enhanced by another. Often the degree of this potentiation is low; but Murphy and his co-workers (16) report that it exceeded 100 in animal experiments with malathion and triorthotolyl phosphate, a compound that is not a pesticide. Arterberry and his associates (3) have reported what apparently is the only known instance of a human pesticide poisoning suspected of being aggravated by a drug.

In addition to clinical illness, other effects of pesticides must be recognized. Walker and his associates (22) found DDT in every complete meal they analyzed in this country, but the concentration in the entire diet is so low that the average intake is only 0.184 mg. per man per day. Because DDT is so widely distributed in food, we at the Communicable Disease Center have made numerous studies of this compound and found it occurs also in the fat of almost everyone in the country (7, 11, 15, 19). In the general population, the average storage of DDT is about 5 ppm, and the concentration of all DDT-derived material expressed as DDT is about 12 ppm (11). Meat abstainers (11) and Eskimos (7) store less than the general population. On the contrary, agricultural applicators store about three times as much as the general population (11), and formulators may store more than 600 ppm of DDT and more than 1,000 ppm of DDT-derived material (10). Published results (10) show that men can eat DDT daily at a level approximately 200 times greater than that in the ordinary diet without showing any detectable clinical effect, but of course, they store large amounts of the compound and its derivative, DDE, in their fat tissue. Ortelee (18) found that more than half of the people working for years in DDT-formulating plants excrete, and therefore absorb, DDT at a rate equal to or greater than that of man eating 200 times more DDT than people get from ordinary food. The formulators remained well according to their own evaluation, their work record, and medical examination.

It is a general principle of pharmacology that a steady state of storage is reached in connection with continued, tolerated intake of a drug or other chemical. Thus, after a period of adjustment, the daily excretion of the chemical becomes as great as the daily absorption. Surveys which were carried out in 1954-56 (11) and again in 1961-62 (20) showed that no change had occurred in DDT storage among people in the United States since 1950, when Laug and his co-workers (14) measured it for the first time. It is not known whether the storage of other compounds is at equilibrium, but a group of British scientists (13) and our own group (12) both have found that traces of dieldrin are stored in people without occupational exposure. My associates and I (12) found traces of lindane also. It seems likely that the storage of other stable compounds will be demonstrated as analytical chemical methods are improved.

Production of Pesticides

Because of their value in public health and agriculture, the production of pesticides has increased greatly. The present manufacture of synthetic ones in the United States is about twice as great as the production of all pesticides was in 1949. The development of newer materials has decreased but not eliminated use of older poisons, such as the arsenicals. Use of some of the newer materials, such as DDT, has continued to increase, while the production of other new materials, such as benzene hexachloride, reached a maximum and then decreased somewhat. The new poisons not only are numerous, but all of them of any importance are sold under many trade names. Over 57 thousand formulations are registered in the United States. Furthermore, poisons may be applied in a variety of ways, some of which were unknown only a few years ago. For example, over 6,000,000 acres of cropland in the State of California alone have pesticides applied to them by aircraft each year. I have discussed these and related facts in greater detail in a report published comparatively recently (8).

Injury from Pesticides in Other Countries

In spite of the extensive production of pesticides, they have a relatively good safety record in the United States, Canada, and the United Kingdom. The record was not so good in some countries of Europe when parathion was

permitted for household use. The difference is not necessarily related to technological advancement. Here again, is an example that the way in which a compound is used may be more important than its toxicity in determining danger.

In Japan, Namba (17) found that there were over 3,000 deaths from parathion alone during the 6-year period 1953 to 1958. There is some reason to suspect that the record may be even worse in certain developing countries where vital statistics are collected in only a fragmentary way or not at all. Certainly, there have been isolated reports of hundreds of cases of human poisoning in single outbreaks (6). Good labeling appears to be the most important single measure for promoting safe use by a literate population.

The Contribution of Pesticides to Health

DDT has contributed to the control of at least 27 diseases of man (21). An aggressive campaign against malaria in Greece reduced the number of cases each year from a million in 1938 to twelve hundred in 1958 (2). Many tropical countries with similar needs lack vigorous programs. This is unfortunate, because prevention of disease has not only saved lives, but also permitted economic development and achievement of a higher standard of living (21).

It is a tragic possibility that the safety record of pesticides may be poorest where the need to increase the use of these compounds is greatest. DDT is credited with eradication of malaria in the United States and Italy. But, the greatest threat of malaria has always been in the tropics. Leading agriculturalists agree, as pointed out by Decker (5), that people of the United States could not be so well fed without the use of agricultural chemicals, and parathion is credited with eliminating starvation in Japan (17). But the need is more dramatically apparent in some developing countries where partial starvation is a present fact.

When other methods of controlling vector-borne diseases are developed—as they undoubtedly will be—care must be taken to test their safety, as well as their efficacy.

Methods of Improving the Safety Record

If the safety record of pesticides is to be improved, both in the developed and the developing countries, attention must be focused on real problems as determined by official vital statistics, by the reports of poison control centers, and by epidemiological studies. As we have seen, problems may not be identical in different countries. Furthermore, there must be variation in the ability of different countries to divert technically trained personnel to these studies and related regulatory activities. Therefore, each country must examine its technical resources critically before charting its course.

There are three kinds of laws designed to minimize injury by pesticides: (a) labeling laws, (b) laws regulating residues on food, and (c) laws regulating use. I have given examples of these kinds of laws and reviewed them in a comprehensive paper already cited (8). To be effective, all these laws must be based on research showing that a practice is safe before it can be permitted. Most of the toxicological information required under these laws is based on animal experiments. Often somewhat greater account is taken of use experience in connection with laws that regulate use directly than in connection with the other two kinds of laws.

Without doubt, good labeling is the most important single step to the safe use of chemicals. Good labeling, in itself, will go a long way to promote proper use. If education does not suffice, direct regulation can restrict use of specified

chemicals to people who are properly trained and equipped for the work. When necessary, medical supervision of workers may be required, and there are now specific laboratory tests that permit measurement and, therefore, regulation of occupational exposure to many pesticides. In many instances, there are also antidotes and other methods of treatment that can be used with great benefit if poisoning does occur.

Conclusion

The very existence of highly active compounds poses potential and often real problems. Our primary protection is based on the extensive animal experiments required under present law. However, ultimate assurance about human safety of a particular compound must come from study of people with intensive and prolonged exposure. Such studies should give adequate warning of even the slightest danger to people in the general population exposed to traces of the same compounds. Much research remains to be done. The professional toxicologist must stay alert to danger, no matter how remote. But the time has passed when it may be usefully said that little is known about the toxicity of pesticides, or that no legal control of their use exists, or that a wide variety of illnesses from which mankind has suffered for generations are now caused by the newer pesticides.

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HOUSE OF COMMONS

First Session—Twenty-sixth Parliament

1963

SPECIAL COMMITTEE

ON

FOOD AND DRUGS

Chairman: Mr. HARRY HARLEY

MINUTES OF PROCEEDINGS AND EVIDENCE

No. 15

THURSDAY, NOVEMBER 28, 1963

WITNESSES:

Mr. R. E. Curran, Q.C., Legal Adviser of the Department of National Health and Welfare; and *from the Food and Drug Directorate*, Department of National Health and Welfare: Dr. C. A. Morrell, Director; Dr. R. A. Chapman, Assistant Director, Foods; and Mr. J. F. Guy Leduc, in charge of Poison Control Programs.

ROGER DUHAMEL, F.R.S.C.
QUEEN'S PRINTER AND CONTROLLER OF STATIONERY
OTTAWA, 1963

SPECIAL COMMITTEE ON FOOD AND DRUGS

Chairman: Mr. Harry Harley

Vice-Chairman: Mr. Rodger Mitchell

and Messrs.

Armstrong,
Asselin (*Richmond-
Wolfe*),
Baldwin,
Cashin,
Casselman, Mrs.,
Côté (*Longueuil*),
Enns,

Fairweather,
Francis,
Gauthier,
Gelber,
Howe (*Hamilton South*),
Jorgenson,
Macaluso,
Marcoux,

Nesbitt,
Orlikow,
Otto,
Roxburgh,
Rynard,
Whelan,
Willoughby.—24.

(Quorum 8)

Gabrielle Savard,
Clerk of the Committee.

CORRECTION (English copy only)

PROCEEDINGS No. 12—Tuesday, November 19, 1963.

In the Minutes of Proceedings and Evidence—

Page 431, lines 20 and 21 should read:

“In the case of the chlorinated hydrocarbons,
we have no what we call specific antidotes.”

MINUTES OF PROCEEDINGS

THURSDAY, November 28, 1963.

(16)

The Special Committee on Food and Drugs met this day at 9:40 a.m. The Chairman, Mr. Harry C. Harley, presided.

Members present: Messrs. Baldwin, Côté (*Longueuil*), Enns, Fairweather, Gelber, Harley, Jorgenson, Mitchell, Orlikow, Otto, Roxburgh, Rynard, Whelan and Willoughby—(14).

In attendance: Mr. R. E. Curran, Q.C., Legal Adviser of the Department of National Health and Welfare; and from the *Food and Drug Directorate*, Department of National Health and Welfare: Dr. C. A. Morrell, Director; Dr. R. A. Chapman, Assistant Director, Foods; and Mr. J. F. Guy Leduc, in charge of Poison Control Programs.

The Chairman invited Mr. Curran to say a few words of introduction.

Mr. Curran amplified the statement previously made with regard to the licensing of the manufacturers of drugs and pesticides; he was questioned on the legislation governing the Pest Control Products Act and the Food and Drugs Act, and on the federal and provincial jurisdiction.

Dr. Morrell explained the methods of enforcing regulations and clauses of the Act dealing with pesticides. He was assisted by Dr. Chapman.

Dr. Morrell and Mr. Leduc answered questions relating to poison control centres.

On motion of Mr. Whelan, seconded by Mr. Mitchell,

Agreed,—That a list showing percentage distribution of accidental poisoning by class of products in 1960 be printed as an appendix to this day's proceedings. (*See Appendix "A"*).

The Chairman, on behalf of the Committee, thanked the witnesses and announced that the provincial entomologist of Ontario is expected to appear on December 10th, and that the steering committee will consider the suggestion of showing a film portraying the development of a chemical or a pesticide, and a film based on Miss Rachel Carson's book.

At 11:10 a.m. the Committee adjourned to the call of the Chair.

Gabrielle Savard,
Clerk of the Committee.

EVIDENCE

THURSDAY, November 28, 1963.

The CHAIRMAN: We now have a quorum. We have before us this morning the director of the food and drug directorate of the Department of National Health and Welfare, Dr. Morrell. With him is Mr. Curran, legal adviser to the department. Dr. Morrell has appeared before us at a previous meeting and has made a statement, and Mr. Curran might say a few words of introduction, and then the meeting is open for questioning.

Mr. R. E. CURRAN (*Legal Adviser, Department of National Health and Welfare*): Mr. Chairman, I think members are familiar with the statement that was made at a former committee meeting when I was asked to outline the question of the licensing of the manufacturers of drugs. I assume that that statement has been noted by the committee, and in the present context, which I understand is related specifically to pesticides, I would be very glad to amplify the statement that I previously made and to answer any questions that might be considered relevant by the members of the committee. Perhaps I should make it quite clear that as the legal adviser to the Department of National Health and Welfare I would be glad to deal with any subjects which come within our administrative responsibility, but there are areas where perhaps I would feel that policy considerations are involved where I might be under some disability in trying to speak on them or to suggest what the situation might be. I think I should make that slight qualification.

The CHAIRMAN: Thank you, Mr. Curran.

Mr. BALDWIN: I suppose there is considerable similarity between the administration of the Pest Control Products Act which deals with pesticides and the Food and Drugs Act inasmuch as both of them, so far as legality is concerned, rest on the Criminal Code.

Mr. CURRAN: Mr. Baldwin, I have never really considered the basis of the Pest Control Products Act other than having read it and being generally familiar with it. I would think that a pesticide is merely another designated substance and it would lend itself to the same type of control as might be applicable in the drug field. As I explained to you on a former occasion, we do not consider that, under the Criminal Code provision under which the food and drug directorate operates, we have authority to license a trade or an industry as such. We do consider that our authority extends to designated substances which in the public interest require some special supervisory control. It is in that field that we have licensed in the case of narcotics, controlled drugs, biologics, and so on.

Now, to the extent that the public interest is involved—and I assume that it is very much so in the case of pesticides which are lethal in their very nature—the same general considerations could be made to apply. However, I have not delved any deeper than that. That would be the general answer to your question.

Mr. BALDWIN: I think it was Mr. Jefferson of the Department of Agriculture who indicated, in response to a question put by me earlier, that the legal foundation for the Pest Control Products Act is the Criminal Code, and because of the fact that the legality of the Food and Drugs Act was based on similar considerations I brought this up. Your knowledge of the procedure and the constitutional

and legal aspects of the Food and Drugs Act would of course have some bearing on the other legislation. For that reason I would follow up by asking you whether the constitutionality of the Food and Drugs Act has ever been successfully challenged in any way or in any aspect of it.

Mr. CURRAN: The constitutional position of the Food and Drugs Act was challenged back in 1934 in British Columbia and the case in question is called the Standard Sausage Company versus Lee, and the court of appeal in British Columbia upheld the constitutional position of the Food and Drugs Act as criminal law.

Mr. BALDWIN: There was a case, was there not, fairly recently on the enforcement of the regulations as applied to the sale of meat in Ontario. Was that a general constitutional test as to the regulations?

Mr. CURRAN: This was a test of the regulations. The point that arose out of the dead meat investigation was that the authority to prohibit the sale of dead meat was challenged as *being in excess of the power to make regulations*. The contention was not upheld by the court of appeal so that it is beyond argument today. There is authority to prohibit the sale of a product under the Food and Drugs Act. It was not really constitutionally challenged in the normal sense but this was raised by way of defence by the defence lawyer.

Mr. BALDWIN: I have exhausted all I need to say. In regard to pesticides we have considered various suggestions which have been advanced by different witnesses and organizations on how we can be of assistance in making recommendations. Suggestions have been advanced with regard to the licensing of people in trades rather than trying to regulate the safety, control and sale of the products. The simple answer, or what you say, is that in your opinion it is very doubtful whether the federal government has any legal right to license people or individuals to try to arrive at safety in the sale of products.

Mr. CURRAN: In answer to that, Mr. Baldwin, I think that authority might be found, and I am not expressing an opinion on the present Act itself. It has never been challenged and it has been in the statute books for many years. Authority there relates to registration which is really a form of licensing of the pest control products as a condition of their sale.

You move into different areas when you talk about the use of pest control products, that is the person who might be entitled to use them. In that area a number of provinces have already enacted legislation requiring permits and so forth with regard to persons who can use the pest control products on crops and so forth. I think you could establish a distinction between the product itself and who is competent to use it. I would prefer to draw that type of distinction because that might lend itself to the provincial jurisdiction as regards exterminators and people of that kind. I think some of the provinces have enacted legislation to require licensing of persons who use these products. However, so far as the manufacturer, importation or initial sale is concerned, I think that is now covered by the Pest Control Products Act.

Mr. BALDWIN: Would it be valid or legal for the federal government to enact a simple provision that no person shall sell any pesticides as designated in the act unless he is licensed to do so under the Pest Control Products Act? Would this be a wedding of the two ideas which would make valid the federal constitutional legislation?

Mr. CURRAN: That is a question which I would want to give quite a lot of thought because even in the food and drug field we do not license or purport to designate a person who can sell drugs. We establish criteria with respect to the conditions of manufacture, but traditionally it is under provincial law that the conditions of sale are laid down; that is the pharmacy laws of the province all relate to who can sell drugs. This is an area under the Food and Drugs Act in which we do not purport to say who can prescribe or sell a drug. We simply

say that a person can prescribe a drug if he is authorized to do so by the law of the province.

Mr. WILLOUGHBY: Mr. Chairman, I would like to ask this question. It is probably an easy one to answer. We have been advised by the various witnesses that there is a definite check, especially in some of the provinces, on the food contamination related particularly to dairy products. In cases where this contamination exceeds the so-called minimum standards a particular product is removed from the market. What steps are being taken to check excessive contamination of products, other than dairy, such as fruit, vegetables and food of that type? It seems to me that it is difficult to really control the small market gardener who sells his produce without any obvious control, but I dare say there must be some control. Could you answer my question on whether there is effective control and examination of these products?

Mr. CURRAN: Well, I do not want to appear to be evasive in giving my answer. I would like, first of all, to say that the definition of "drug" in the Food and Drugs Act, includes:

...any material that may be used for disinfection in premises in which food is manufactured, prepared or kept or for the control of vermin in such premises;

This provision is related entirely to the avoidance of contamination of foodstuff by pests and other things. Dr. Morrell would be in a much better position to tell you what administrative steps are taken to prevent the contamination of foods through the use of pesticides. I do not think this is so much a question for a lawyer as it is an administrative one. So I would prefer that Dr. Morrell deal with it and tell you what steps are actually taken.

Dr. C. A. MORRELL (*Director, Food and Drug Directorate, Department of National Health and Welfare*): There are several ways in which we go about enforcing the regulations of the Food and Drugs Act and the pertinent clauses of the Act which have to do with the field of pesticides. One method is to employ investigators who go about the country. These investigators are in touch with agronomists and the people who set the spray calendars, and their purpose is to find out what pesticides are used, in what areas, and on what crops. If they have any reason to suspect that a pesticide is being misused, they will take samples from the grower. These samples are sent to the nearest food and drug laboratory for analysis.

There are other methods, of course, such as taking of samples from the Byward Market in Ottawa, and the Bonsecours Market in Montreal. These samples are then sent back to the nearest regional laboratory for analysis. We also take samples from groceries or supermarket stores and have them analyzed as well. We also take samples from import shipments on occasion and analyse such samples. We may do from 1,200 to 1,400 samples per year on fruits, vegetables, and other foods.

Mr. WILLOUGHBY: Where there is excessive contamination I presume these foods are removed from the market until the problem has been corrected?

Mr. MORRELL: If the residue which is found on these foods is higher than the tolerance set by the regulations, some enforcement action is taken. On occasion it may be that the tolerance is exceeded but by only a very small amount. For instance, if the tolerance is seven parts per million, and you find eight, this is not considered to be a very serious health hazard. Effort is made to find out where these products were grown, and on occasion we are able to find the grower, when he is informed of what has happened and warned to be more careful in the use of pesticides. Of course, at other times, there may be an instance where a product is sold before an analysis can be carried out. This will happen unless seizure is made in advance of the analysis, because the

analysis may take not hours, but perhaps some days to complete. If the product has been found to be contaminated in the past, then we will make a seizure to begin with and analyse the product, so that we may be able to do something with it from the enforcement standpoint. If we find that there has been a considerable excess over the tolerance, the product is seized and destroyed. This we have found to be one of the most effective ways to enforce the pesticide regulations.

As you probably know, we have had some court cases recently, and these can be an effective way too. But I think the purpose of our enforcement procedures is to make sure that over a long period there is no continued excess of pesticide residues on foods; and all means that we can use to obtain that objective are employed. There are warnings, as I mentioned, and seizures and prosecutions. We use all these methods.

Mr. WILLOUGHBY: How long does it take from the time the product is removed for examination before the report is received?

Mr. MORRELL: It depends of course on the pesticide being looked for, and on the method that is available for it. In some cases it may be several days, and in other cases a matter of a day.

Mr. WHELAN: Mr. Chairman, how many inspectors are there in Canada doing this work?

Mr. MORRELL: At the present time I think we have around 105 field inspectors. They are not all doing this work because they have many other jobs too. So it is difficult to say. I do not think we have any inspectors whose sole job it is to work on pesticides. They do it along with other work to which they are assigned, and at certain seasons of the year. Some inspectors may spend most of their time in the field looking over suspicious areas for crop pesticides.

Mr. WHELAN: I am thinking of one particular phase, namely the food processing industry. Do you find it very hard to trace there? I know your inspectors inspect canned food such as vegetables and fruit. If they found a can which had a residue in it or some foreign material, would you find it difficult to trace it back?

Mr. MORRELL: I would think that a can of food would be more easily traced than fresh vegetables, because the can has a label on it with the name of the manufacturer, and very often a code number. So we can go back to the plant and examine the day's record, when we may even find the particular area in which that vegetable was grown. But I must point out that, since the fruit and vegetable division of the Department of Agriculture do the inspections in the plant, we confine our activities in this area to the market samples.

Mr. WHELAN: I think the food processing industry is the easiest in which to trace back.

Mr. MORRELL: Yes, I agree. It probably is.

Mr. WHELAN: At one time we used to be commercial operators for Green Giant of Canada. One of the men working for me placed two cans of gasoline in the back of his truck and started out around three o'clock in the morning to pick sweet corn. He had to move from one field to another when he had part of the load in the truck.

About January one of the representatives of the company came to my foreman and said: "did you people ever spill gasoline on sweet corn?" Our hired man had said something about it. He thought maybe some gas had got on it, but they never did anything about it. He told me after it had happened. So this event was traced right back to the load through the serial number on the can, and they destroyed so many cases ahead of it and so many cases behind it to make sure that the trouble was corrected. I think that was done through your inspection or through some government inspector, or through the company's own plant.

This can be done very easily with residues, if you can trace them back to the same field. Most of these efficiently operated companies could.

Mr. MORRELL: I agree that if you have a label and code number it is much easier to trace that product than just to have a head of lettuce or something like that on the shelves.

The CHAIRMAN: Are there any questions?

Mr. CURRAN: I presume this point has already been covered, but in case it has not, it might be useful to point out that food and drug regulations do contain very elaborate provisions with respect to tolerances which certain foods might bear, and so it becomes an offence to sell a food which contains one of these substances in excess of the tolerance which is set out. There is a clear offence established once the substance exceeds the permitted tolerance. I thought it useful to point that out in the context of Dr. Morrell's statement as regards his enforcement procedures.

Mr. BALDWIN: Mr. Chairman, I have a question for Mr. Curran following up the point I made before. I notice that section 37 of the Food and Drug Act gives authority to make regulations providing for the issuing of licences for the importation, manufacture or sale. Is that a licence in respect of a drug or a licence in respect of the person who sells the drug? My question deals with controlled drugs.

Mr. CURRAN: You are now referring to controlled drugs. This is a licence to deal in controlled drugs. This is not a licence to the individual, to control his activities; it is only in relation to that portion of his activities which relates to controlled drugs. We are not licensing him as a manufacturer at large but merely limiting his use of controlled drugs.

Mr. BALDWIN: I wonder if you could give some thought to the question I raised. This has been brought up before and I do not know what the view of the committee may finally be, but I am sure that before we make any recommendations we ought to be sure that we are within our rights as members of the federal parliament in making such recommendations. This question of licensing has been raised on a number of occasions. It would be proper to know the possible limits on which we can base our recommendations. Perhaps you would have a chance to consider this point some time before we are finished.

May I ask Dr. Morrell a question? I had hoped I could have the transcript of the proceedings of our last meeting, but I know it is not possible. There was an answer given by Mr. Miller on the extent to which the food and drug directorate had advanced their research with regard to pesticides. I do not know if any other member of the committee recalls his answer, but it was, generally speaking, that certain sufficient research had been made so that there was a reasonable position to be adopted on the question of residues not being harmful to human health. I am trying to summarize it fairly accurately. I wonder if Dr. Morrell would like to comment on that and say to what extent research has been done and if he would deal with this particular subject matter.

Mr. MORRELL: Mr. Chairman, I think Dr. Coon in his statement and subsequent replies to questions indicated quite clearly that you cannot guarantee with absolute assurance anything in this field; that people have not lived long enough with specified residues to be absolutely sure. However, in so far as evidence goes today, if the food product has no greater residue on it than the tolerances that have been provided, there should be no harm to the consumer over very long periods of time. I must point out, of course, that this evidence is largely gained from experiments on animals, and then a fairly large safety factor is applied and other factors are brought into the calculation of the maximum permitted level. The results obtained on animals are the basis for the

setting of the tolerance for humans. What evidence we have in terms of human material does I think support the evidence that we have gained from animals that the levels that we have set are safe levels. I feel that we have justification for saying that the tolerances that are now established in the Food and Drug Act are very adequate protection for the consumer.

Mr. CURRAN: Mr. Chairman, I wonder if through you I might ask Mr. Baldwin if he would particularize a little more the question which he would like to have me consider so that the record could reflect the answer. As I understand your question, Mr. Baldwin, you would like to know whether it would be within federal competence to enact legislation which would provide a form of licensing control over the manufacture as well as the sale of pesticides as they might be defined.

Mr. BALDWIN: Licensing in terms of licences issued to people with respect to a particular product filed under the Pest Control Products Act. In addition to the Pest Control Products Act, is it possible to enact an amendment to the regulatory section saying that no persons shall sell a product as defined in this act unless they are licensed?

Mr. CURRAN: That would go beyond the question of manufacture in the first instance. Would that go down to the point of ultimate retail distribution? Your question then relates not only to the initial manufacture of the product by a licensed person but to a regulation that a person cannot handle the product unless he is a licensed dealer in the particular substance.

Mr. BALDWIN: Stating that no person shall sell a certain product unless licensed under this act.

Mr. CURRAN: In other words, the question would apply to our method of dealing with controlled drugs where we provide a form of licensing. I should amplify it at this point and say that in regard to controlled drugs we do provide for licences to deal in controlled drugs but at the same time we recognize as licensed people of the various disciplined professions, pharmacists and doctors, as being in possession of a form of licensing which is not granted by the federal authority but is a provincial licence. Nevertheless, we recognize that as a licence in the sense that we are concerned with the ultimate control of the distribution of controlled drugs. Therefore, the answer to your question may very well relate to different areas; one would be the provincial jurisdiction to license trades or professions as well as the federal authority to license those dealing in the substances.

Mr. BALDWIN: Yes, that is the point.

Mr. WHELAN: Could I ask Dr. Morrell a question? The amount of residue that is carried over in food products, from the evidence that we have heard, is not very great and you would have to eat it steadily to have any residue remain in the human body. Is that not right?

Mr. MORRELL: It depends on the pesticide, how stable it is, and on other properties of the pesticide. I presume that even very small residues of some of them, for example D.D.T., consumed over a period of time would be detectable eventually in the fat of the body. Other pesticides are more readily destroyed by weather conditions and perhaps by metabolism in the human body itself. You would not find residues of these accumulating in the body possibly for other reasons too, their solubility, and so on, in depot areas of the body. So it does depend entirely on what kind of pesticides you are talking about.

Mr. WHELAN: I have another question on the legal aspect of it. Do you find that licensing would not control the misuse of any of these drugs? From my own knowledge of the experience in Manitoba I would say that they

keep a record there of who is selling this material, that is all as far as the control and sale of it is concerned. That is all they do, they just give licences to people who are selling drugs and who are maybe not instructed in their use.

Mr. CURRAN: As I see the Manitoba legislation, it virtually relates to the control of pesticides sold to farmers, but there is conceivably another area that would not be covered by the Manitoba legislation. I think it is quite obvious that it is limited to dealings with farmers. The point that you have raised, Mr. Whelan, is a very valid one because no form of licensing is ever going to ensure complete control over the user of a substance. You can license dealers, you can provide for labelling warnings, you can do everything to alert the user, but you cannot guarantee and you cannot legislate against foolishness. There is no form of licensing that would virtually ensure that the user of a product will not violate the conditions under which the product is sold or recommended for use.

Mr. WHELAN: We could say the same thing about a prescription that a druggist fills. It is not a guarantee that most of the time people understand the instructions on the prescriptions.

Mr. MITCHELL: The dosage should be on the label. As far as I know, the prescription should be properly labelled with the dosage recommended.

Mr. ROXBURGH: I have an article right here.

Mr. OTTO: Mr. Chairman, is Mr. Whelan going to take the stand as a witness?

Mr. WHELAN: I would like to say one thing more about the reading of labels. The other morning many of us read the notices of meetings and we all got mixed up on where we should be because we did not pay sufficient attention to it, nor do people pay sufficient attention to any label.

Mr. ROXBURGH: I have an article in the newspaper here about a mother who attempted to treat her baby's cold with a medicine that a doctor had given her for the child a month earlier. The bottle had no label but, remembering the dosage prescribed, she decided that since it had worked so well she could double it. At the third dosage the baby stopped breathing. However, on the question of labels, we do not question you on labels, do we?

Mr. MORRELL: Label of what?

Mr. ROXBURGH: On pesticides.

Mr. MORRELL: No, not the label on pesticides; foods and drugs, yes. The regulations under the Food and Drugs Act are concerned with labelling.

The CHAIRMAN: Could I ask you a question, Dr. Morrell?

As I understand it, dieldrin has no tolerance at the present time under the regulations of the food and drug directorate. Were these zero tolerances first applied because of a lack of knowledge of the toxicity or because of its toxic properties, this being a very toxic drug? And, once a tolerance is established in your department, under what conditions and how is a change brought about in the tolerance?

Mr. MORRELL: In reply to your question, there is a tolerance established for dieldrin which is given in the table at page 63 (c) of the food and drug regulations. For example, there is a tolerance of 0.1 parts per million in the case of asparagus, barley, carrots, celery, corn, cranberries, eggplants, flax, grapes, horseradish, oats, onions, parsnips, peppers, plums, potatoes, prunes, radishes, red currants, rye, strawberries, tomatoes, and wheat. There is also a tolerance of 0.25 parts per million on another list of vegetables and fruits, so the tolerances have been established for dieldrin in respect of some foods.

I do not believe I have answered your second question.

The CHAIRMAN: I was referring to the banning of the use of this under certain conditions in Manitoba. Under what conditions and how would the food and drug department proceed to change their tolerance limits?

Mr. MORRELL: We had no tolerance; they were concerned with dairy products. There was no mention of dairy products in this list of foods I read. So, not having established a tolerance for dieldrin in dairy products, if we find a dairy product with dieldrin in it, it would be in violation of the act itself. I think this is based on the circumstances in the western provinces: the use of dieldrin to prevent grasshoppers, the subsequent contamination of the forage and, through the cow, to the milk. This has led to some prosecutions there. Perhaps this was a factor in respect of the decision by Manitoba that was mentioned.

The CHAIRMAN: If the people out there thought this was an unreasonable tolerance would they protest to your department or would they have to make a submission to the manufacturer? What is the procedure there?

Mr. MORRELL: All of our tolerances are based on data submitted by the manufacturers who have accumulated the information they present to us and the Department of Agriculture from a fairly wide variety of tests concerning not only the use of the pesticide on food crops but, of course, from the toxicological and pharmacological data as well. Occasionally we have made an alteration in a pesticide tolerance. As you are aware by now, when we are establishing a tolerance in the first place all this material is examined and reviewed and finally a calculation is arrived at in which a tolerance is set.

It would take something more than a protest; they would have to supply information, technical, scientific and medical to the effect that the request they were making at that time would not lead to a harmful residue on crops or that the residue which they propose was not harmful to the public.

Mr. ENNS: But, this generally, would be beyond the scope of any producer; it would be to the advantage of any formulator of the products to establish perhaps a safety margin.

Mr. MORRELL: It probably would be beyond the scope of a producer or user to provide the information, if you are referring to the producer of a food crop.

Mr. BALDWIN: Mr. Chairman, I have some bits and pieces of information hanging around and if I may I would like to take this opportunity to put a couple of questions.

I have a press item which I would like to mention. This is from the *Wall Street Journal*, under date of June 4 last, which says:

Government officials puzzle over catches of sharks, tuna and other ocean fish containing high doses of D.D.T. and other pest-killers. The cause is not known. Fatty tissues of some fish caught far off shore contained pesticide concentrations of up to 200 parts per million. Government limits for most edible meats are about 10 parts per million or less.

Dr. Morrell, would you care to make a comment on this? Have any matters of this nature ever been brought to the attention of your department, and is there any explanation for it?

Mr. MORRELL: This particular case to which you have made reference was brought to our attention. Did it not refer to a tuna fish?

Mr. BALDWIN: Yes.

Mr. MORRELL: If I remember correctly, it referred to tuna fish caught in the Pacific. It was analysed and found to contain 200 parts per million of D.D.T. in the fatty tissue.

Of course, this is a curious thing. Technically speaking, in a sense, this is a deep sea fish and not likely to come directly into contact with spray residues. But, the assumption could be that the fish preys on other fish who do enter the fresh water streams, as a result of which they may get some of the run-off into their bodies, and because D.D.T. is fat soluble and because it is stable the small amounts that are taken from time to time accumulate in the body fat of the larger fish. This is possibly the way in which this high level could have been reached in a deep sea fish.

The CHAIRMAN: Are there any further question, gentlemen?

Mr. WHELAN: I thought we were given evidence to the effect that there is little opportunity of D.D.T. getting into fish; that there was little chance that the eggs would hatch, and that it was one of the safest things we could eat. This information was given by officials who appeared here from the Department of Fisheries. At least, that was the impression I took from what was said.

Mr. MORRELL: We have examined some fish in our laboratories and perhaps Dr. Chapman could give details of the findings.

Dr. CHAPMAN (*Assistant Director, Foods, Food and Drug Directorate, Department of National Health and Welfare*): Mr. Chairman, in my opinion, the case mentioned in respect of the tuna fish on the Pacific coast was an exceptional one. We have taken samples of fish on both the east and west coasts after hearing of this case and we did not find any repetition of this. We did find detectable amounts in a few of the fish we examined but it involved very, very small amounts. This was just detectable by the very sensitive methods and techniques which we now use.

I think possibly the statement from the Department of Fisheries related to the presence of D.D.T. in the water in the areas where the fish are spawning and hatching. Of course, under these circumstances small amounts would have a detrimental effect. But, as Dr. Morrell suggested, in respect of the case on the west coast, it must have been due to a build-up of D.D.T. through the biological chain in various species.

The CHAIRMAN: In respect of the fish on the west coast, is there a regular check kept, for instance, in the case of the salmon which are caught?

Mr. CHAPMAN: Well, of course, we do include fish in the samples of food that we take routinely to check the possibility of pesticide residues, so salmon are checked along with other food products.

We anticipate this year examining about 2,000 such samples from all foods across the country.

The CHAIRMAN: Have you a question, Dr. Rynard?

Mr. RYNARD: My questions have been partially answered, Mr. Chairman. If we do know that those deep sea fish are feeding on the little fish, which have a certain amount of D.D.T., how are we going to arrive at the level which D.D.T. is stored in the body of the fish?

The doctor said there was not any appreciable increase but, if amounts of D.D.T. are in the little fish and the deep sea fish are feeding on them it seems to me there would be some cause for alarm. Would there be a chance, as a result of the deep sea fish feeding on the little fish, of an increase in the poisonous substances or D.D.T. to the point where it is unfit for human consumption?

Mr. CHAPMAN: Again, I would like to emphasize this was an exceptional case. The food and drug administration of the United States, of course, became very interested in this and examined the particular oil from this particular fish. They did learn that it did contain approximately 200 parts per million of D.D.T. But, this was the only fish they were able to locate. However, they did make quite a complete investigation of this matter. As I said, this appeared to be an exceptional situation.

Mr. RYNARD: As I understand it, the amount would vary with the amount of fat the fish had in their body, as is true in the case of the human.

Mr. CHAPMAN: This figure of 200 parts per million is based on the fat, and D.D.T. is certainly deposited in the fat.

Mr. RYNARD: That is the point I was raising. But, are we going to get a build-up in the fish? As Dr. Morrell stated, this has not been going on long enough to know the end result, and I am wondering if it might not be building up in a lot of our fish.

Mr. CHAPMAN: As Dr. Coon pointed out in his testimony before this committee, I do not think that it builds up indefinitely. It reaches a certain level and then levels off.

Mr. ENNS: Is it not true that if it does come in these excessive quantities a fish diet would have to form a fairly consistent part of the human diet in order to be detrimental to our health. As I understand it, eating one fish with this content would not necessarily be harmful to the individual.

Mr. CHAPMAN: No.

Mr. ENNS: And, you have pointed out this was a very exceptional occurrence. It is very unlikely we would have a diet of fish every day.

Mr. CHAPMAN: This would be most unlikely. We do know there are only very, very small amounts present.

Mr. RYNARD: Little bits of poison do not bother us.

Mr. COTE (*Longueuil*): Just do not eat up the fat.

Mr. WHELAN: I should like to ask whether fish build up an immunity to D.D.T.? I thought they were affected by it, I thought they could not survive where there was a concentration of D.D.T.

Mr. CHAPMAN: You must differentiate between the amount that is in the diet and the amount that eventually builds up in the fat of these fish.

Mr. WHELAN: But how do the little fish survive where there is a concentration of D.D.T.

Mr. CHAPMAN: They can only live where the concentration of D.D.T. would be very low. Nevertheless, it can build up in the oil in these fish to much higher levels than could be tolerated if this amount were in their diet.

The CHAIRMAN: Are there any further questions? The Chairman seems to have more questions than anyone else.

I was wondering if we could leave this subject and go to another question in which a lot of members have been interested, and that is the question of the poison control centres. It has been pointed out that there seemed to be a great many of these in Ontario and some of them are well equipped and have adequate staff while others are only open at certain times of the day. I was wondering exactly how the information is distributed to them and whether there are such things as official poison control centres as far as the federal government is concerned?

Mr. MORRELL: The food and drug directorate got into this in an indirect way. Some six or seven years ago, we were interested in deaths from poisoning as reported by the bureau of statistics, death from accidental-ingestion of certain drugs by youngsters, and we thought that perhaps warning labels were needed in the case of particular substances. When we investigated the number of deaths that were reported by the bureau and the cause of death in each case we found that the number of people who died from the ingestion of drugs was not greater than the number of people who had died from the ingestion of products that were not drugs, that were household products. Since there was quite a bit of discussion elsewhere at that time, and we had many questions from people

throughout the country as to whose responsibility it was and why we did not do something about the labelling of these products, we felt it would be a suitable bit of work if we collected the information on the poisonous ingredients in various household products so as to provide a method of treatment for such poisons. I think it was in 1957 that we finally prepared a series of cards listing not only the proprietary and patent medicines but also a considerable number of other products that are commonly used in the home. These cards were offered, I think, through the dominion council of health to various provincial health departments for use in the hospitals. In many cases of accidental poisoning that are brought to the hospital as an emergency, the difficulty is that the doctor who has to deal with the case is unaware of what poison he is dealing with because in many cases of course the list of ingredients is not given on the label. In that case the information on the card would help to resolve that difficulty. I think this was the beginning of the establishment of poison control centres in the hospitals in various provinces.

Now, it was not the business of the food and drug directorate to establish poison control centres. We merely offered information to those hospitals which wanted to establish the centres. As the food and drug directorate we have no authority, and perhaps no particular competence either, as to what should constitute a proper and adequate poison control centre. Our rule in this has been the supplying of information and in general the suggestion of a method of treatment for a particular type of poison, and we have adhered to this.

Further to the supplying of information, we believe we should get something back from the hospital for our use and interest. We have therefore asked the poison control centres to fill out forms on each poison case they have encountered and to send them to us. We are anxious to know what particular items were the worst offenders and if they are drug products. If they are drug products, then an amendment to our legislation or some labelling change may be required and may be helpful in reducing the number of poisons from a particular substance. We have used the reports of the poison control centres to give us this information. Mr. Leduc, who is in charge of the poison control programs so far as the food and drug directorate is concerned, is here and he could tell you the relative number of poisonings from household products such as cleaners, polishers, kerosene and so forth as against the drug products. At the moment of course we have no legislative authority over things that cannot be classified as foods, drugs, cosmetics and medical devices. All we are doing here is to provide information and collect information from the centres. I do not know whether that is a complete answer to your question.

Mr. WILLOUGHBY: Could I ask Dr. Morrell whether his directorate keeps a list of the new products that are being registered so as to notify the poison centres immediately that this new drug is being released? They will then know what type of antidote or what treatment to apply.

Mr. MORRELL: These are relatively few. You know that new drugs are not just new chemical entities; they are perhaps combinations of old drugs in different proportions. If it is that kind of new drug, the method of treatment is already known. However, if it is a new substance, then the method of treatment would be very valuable. Would you like to say something on that, Mr. Leduc?

Mr. J. F. G. LEDUC (*In charge of Poison Control Programs, Food and Drug Directorate*): Mr. Chairman, with regard to new drugs, at the present time we have sent limited information to poison control centres because they were all asking for information on household products—that was their main interest. We have sent some information on new drugs, but most of our information has been on household chemicals.

Mr. MORRELL: The new drugs are not so important from this standpoint because they are not likely to be in many homes; that is the first aspect of it, and they are likely to be prescription drugs; that is the second aspect of it. They are not household remedies, such as A.S.A., that are left around in almost every home. The interest has been directed to what is actually happening, the experience that the poison control centres are getting directs attention to other types of products.

Mr. MITCHELL: May I ask a question, Mr. Chairman? Has it not been suggested, Dr. Morrell, that the labelling of a bottle may not necessarily relate to the amount but to the contents of a patent, which of course is a secret formula and which would, in turn, assist the mother or the doctor in knowing what the poison was in the process of attempting to discover what kind of antidote to use for it. Do you think it would be helpful—I know there would be a great deal of objection from the manufacturers, but would it not be necessary for the safety of the public? I think suggestions have been made to your department that this should be put on the labels. A case in point is one which I happen to know, and probably you do too, of a particular patent which had to be traced right back to the manufacturer through considerable telephoning to find out what the drug or what the item was because an overdose had been taken by the child. If it is a long question, you can take it apart the way you wish.

Mr. MORRELL: I think, Mr. Chairman, that Mr. Mitchell is referring to drugs registered under the Proprietary or Patent Medicine Act. I might say at the very beginning that the ingredients of all proprietary and patent medicines that would be harmful are listed on these cards that are now in the possession of the poison control centres, so that they do have a complete list of the active or potentially harmful ingredients of all patent medicines in their hands at present.

Mr. LEDUC: Most of the patent medicines, maybe 90 per cent of them. There are some gradually being registered and cards are sent out, but there is a certain lag period.

Mr. MITCHELL: This is voluntary information by the manufacturer, or is it asked for authoritatively?

Mr. MORRELL: As you know possibly, before you can register any product under the Proprietary or Patent Medicine Act you must give a complete list of ingredients to the department. Therefore, that information is available in the department. What we did get from the manufacturer was his permission to use the information in this way; that is by supplying it on the cards that got to the poison control centres.

Now, as you did say before, there has been some pressure or some suggestions that the Proprietary or Patent Medicine Act be revised. We have studied it to the point that I think we have on two occasions written amendments to it, but these have not yet been presented to the department.

Mr. ROXBURGH: How are the poison control centres set up? What regulations are there to establish a poison control centre, if any?

Mr. MORRELL: We have none at all, Mr. Roxburgh, in the Food and Drugs Act. If they are set up by a regulation, it would be a provincial regulation.

Mr. ROXBURGH: It was quite a surprise to most of us at our last meeting, including our doctors, to hear that the poison control centres in most of our hospitals were certainly not up to the regulations by any means, shape or form. It was suggested that properly organized poison control centres, with service day and night and with the right man on the job all the time, might be established. In the city of Toronto in the sick children's hospital there is one such centre but in different areas where small communities are grouped together there may be half a dozen hospitals with control centres which are less

efficiently run. I thought that rather than have each person call the poison control centre which might have very little actual knowledge, perhaps one efficient control centre should be set up. What is your opinion on this?

Mr. MORRELL: We have taken no active interest in how the poison control centres are established and what they consist of. We felt that was entirely out of our jurisdiction and that it was in the hands of the provinces and of the provincial departments of health, or whoever control the hospitals. We have avoided even making the suggestion. All I know is perhaps not more than what you know and what you have heard.

Mr. ROXBURGH: Should we not make a recommendation on that from this committee? It seems to me that this is becoming more and more important. I must admit that as a layman I had not even heard about it before and I do not mind saying this; but it seems to me that with our increased awareness of insecticides and pesticides and even ordinary headache tablets, an overdose of which produced in Canada last year 25 per cent of the deaths, or whatever it may be, we should perhaps pay more special attention to it. Naturally, we are a federal body and this is controlled by the provinces, but we do have a provincial and federal get-together at the present time. Could we not have something similar on this subject? Have you any opinion on this, not necessarily as a medical man but in your capacity as director of the food drug directorate?

Mr. MORRELL: I am not a medical man. As I have said, I have not really studied it. I have heard that some centres are better than others but I do not quite know why they are better. It may depend on the personnel, their interest and enthusiasm as well as their knowledge. I would not like to say officially, or even unofficially, with my lack of knowledge, what should constitute a proper poison control centre. I am sure there must be people who could advise you on that.

Mr. ROXBURGH: Mr. Chairman, I was wondering under what heading we could take this up? Which department is the one that should take this up, or do we just sit here and do nothing about it?

The CHAIRMAN: The committee is free to make any recommendation that it may want. Some of the things that we may recommend will actually fall under provincial jurisdiction. There is no reason why this cannot be part of our report.

Mr. MITCHELL: It seems to me that these poison control centres, as far as they are part of hospitals and under provincial jurisdiction, are voluntary, are they not?

Mr. WHELAN: I suggest they should not be.

Mr. MITCHELL: The hospital act does not oblige them to set up poison control centres if they do not wish to do so.

Mr. LEDUC: It starts out by being voluntary; some hospital may want to have a poison control centre. They will then write to us telling us that they want the information. We tell them to get in touch with their own minister of health, as he is the one who can authorize them to do so. If he gives them the authority, they inform us of this and then we send out the information.

Mr. MITCHELL: It is still voluntary on the part of the hospitals.

Mr. ROXBURGH: Could we make suggestions which could be directed to the provinces to come up with some legislation on this? What is your idea on it, Dr. Rynard?

Mr. RYNARD: I think this is a real problem. I think we could make a recommendation to the Ontario hospital commission that they check their hospitals

to see that they are furnished with the necessary data to look after cases of poisoning.

I think the thing we have to consider is that poison centres are fine but the first thing a mother does, if she knows that her child takes something poisonous, is either to rush to the out-patient department of the closest hospital or else to call her doctor and rush to his office. It is most essential that the doctor have this information and not the person at home, because that would only apply to very isolated cases. First and foremost it should be the doctor who should have that information or who can get that information because in such cases time is of the essence. Small hospitals should also be provided with the information. It is true that this information should be checked in the bigger centres, but it must also be immediately available to the small hospitals and to the doctors who have the responsibility of treating the cases. I think a recommendation should be made to the Ontario hospital commission or to the minister of health in Ontario and he should be asked to check that carefully so that every hospital and clinic that treats those cases should have the information immediately available.

Mr. ROXBURGH: Can I make such a motion?

The CHAIRMAN: It can be brought up when we are discussing the report. There is also one other way of doing it in a more federal way.

Mr. WHELAN: I should like to point out an oversight on Dr. Rynard's part. This should not only apply to Toronto but to all the provinces and all the ministers of health in Canada.

I should like to say the following, speaking as a layman I think we are creating the incorrect impression, as appeared from newspaper reports and so forth, that our hospitals and doctors know nothing about poison control and antidotes. I was shocked at reports that poison control centres were useless. This is the impression that an ordinary person could get from reading the press on this.

As I said the other day, I am proud of the job that the poison control centre is doing in our area. Our doctors and our people are happy about it in that area. There are a lot of poison control centres that are doing a very good job. I feel that most of the doctors have reasonably good knowledge of this problem. I should like to know if there is any evidence on how many people have actually died in Canada from poisoning, cases which were brought to someone's attention in time and died as the result of the doctor or hospital not knowing the right antidote to give him. Are there records of this? I could not find any information on this. I think the number is probably very small.

Mr. LEDUC: As a rule, the most important factor in the deaths reported by the poison control centres, is the delay that occurred between ingestion and treatment. Often parents will take hours before calling the poison control centre. We can say that 99 per cent of children brought immediately to the poison control centre are saved.

Mr. MORRELL: Even more than that. You will find that about 14,000 reports have come back to us recently.

Mr. LEDUC: In 1961, we published something like 12,000 reports, but later another province sent in their reports, so it added up to 14,485 in 1961. We do not have the figures for 1962 because all our reports have been sent to the departmental statisticians who are compiling the reports. However, from the size of the cabinets that were filled we guessed that there were approximately 16,000 reports received in 1962.

Mr. RYNARD: I should not like the impression to remain here that we cure all cases of poisoning. That would be a very false impression.

Mr. LEDUC: No, but most of them are saved.

Mr. RYNARD: We do not want to create in the minds of the people the impression that we have an antidote for every poison, because no precaution will be taken. There are some we cannot save.

The CHAIRMAN: Going along with what you said, I wondered if it would not be in the interest of the committee for Dr. Leduc to give use the complete figures for that year. He mentioned there were 14,000 cases; it would be interesting to know how many deaths there were and also what were the drugs which caused the poisoning. Have you those statistics for 1961?

Mr. LEDUC: The last complete figures are for 1960.

The CHAIRMAN: Perhaps you could give them to us.

Mr. WHELAN: These figures are very misleading. If the drugs are taken on purpose there is nothing one can do for such cases.

The CHAIRMAN: We are are talking about accidental deaths. This does not include suicides.

Mr. WHELAN: Even if it is a child who gets a small or large dose of something, it is accidental and no doctor or anyone could save him.

The CHAIRMAN: But I think it would be interesting to know out of the 14,000 how many actually died.

Mr. MORRELL: May I point out—and I think Mr. Leduc would confirm this—that we may have 14,000 or 16,000 reports of accidental poisoning of children, of which the great majority are infants to five years of age, but we are not getting reports of all the poisonings in this country by any means. I am sure there are hospitals that are not reporting to us. There may be cases of course that do not get to the hospital. I do not know what the estimate would be; it is certainly a guess on the total number of poisonings in Canada. Of course there is no doubt as to deaths wherever they may have occurred. The number of deaths that you see reported and the number of poisonings do not show the complete picture. The number of poisonings may be twice as high from the morbidity standpoint as related to the mortality.

The CHAIRMAN: Would the committee like to hear these figures or not?

Mr. LEDUC: If we take 1960, which is the last complete report, we received 9,690 reports. Out of these we had eight deaths of children under five years of age. In Canada in 1960 there were 41 deaths of children under five years of age from accidental poisoning. We only had eight reported to us.

Mr. MORRELL: Reported in the poison control centres?

Mr. LEDUC: In Canada in 1960, there were 212 deaths by accidental poisoning, not suicidal deaths. Ninety per cent of the reports we received are about children; we hardly receive any on adults. In the 9,690 cases reported to us the leading cause of poisoning was children's A.S.A., a headache remedy.

Mr. MITCHELL: Children's A.S.A.?

Mr. LEDUC: Yes.

Mr. RYNARD: What was the number?

Mr. LEDUC: One thousand and thirty-one ingestions. Next in line came household cleaners and polishes.

Mr. MORRELL: What about adult A.S.A.?

Mr. LEDUC: Adult A.S.A. and A.S.A. compounds were involved in 952 cases. It brings the total to 1,983 for A.S.A. for adults and children. Do you want a breakdown of all the classes of products that were involved? These are the leading ones.

Mr. WHELAN: Could that be printed and put in our minutes?

The CHAIRMAN: Is this very lengthy, Dr. Leduc or is it only one or two pages?

Mr. LEDUC: One page.

The CHAIRMAN: Would you like to make that motion, Mr. Whelan?

Mr. WHELAN: I move that these figures be included in the minutes of today's meeting.

Mr. MITCHELL: I second that motion.

The CHAIRMAN: All those in favour?

Motion Agreed to.

Mr. WILLOUGHBY: I would like to add to the comments made here by Mr. Whelan that the poison centres are doing an excellent job. I think we should try to correct this misunderstanding. I know that in my own province the poison centres may not be perfect but they are doing an excellent job. The best way to help them is for the department to notify them of new drugs that are being issued so that they can establish what antidotes or what treatment would be indicated for these drugs.

I also agree entirely with Dr. Morrell when he says that reports on a large percentage of these cases of poisoning never even reach the poison control centres. I suppose at least 50 per cent of these cases are treated in doctors' offices or some other places of that type. They therefore do not appear in the records here. The result is that while you might say that a percentage of deaths here is so much out of the 14,000 or 15,000, we probably could double the number of actual cases.

Mr. ROXBURGH: I did not want to create the impression that they are not doing a good job; the only point I was trying to make is that they could do a better job if there was one control centre with all the facilities. I certainly know that there are a lot of small hospitals—I do not know about British Columbia but I am talking about Ontario—that certainly do not have the equipment and the staff that a large centre would have, such as the sick children's hospital, for the very exceptional cases which mean so much. My thoughts on that are that if there was one centre which was open day and night and was a really topnotch control centre, it would not stop the other hospitals from carrying on as they were but in the exceptional cases where they run into difficulties they would call the main centre and get the information right away. My feeling on this legislation is—and maybe we are getting too much of it—that if you have one, the others will carry on the best way they can. They are doing a good job. The only thing I am trying to do is to get it brought to the final point which makes it that much better and may save another life or two. If it happened to be one of your own children it would be very important.

Mr. WILLOUGHBY: I think we can assure Mr. Roxburgh that that is the system at present, that such centres are available.

Mr. WHELAN: And they are starting to do a better job.

Mr. WILLOUGHBY: Any smaller hospital can phone and get the information in five minutes.

Mr. WHELAN: This morning I referred to the poison control centre in our own area and I am very familiar with it because I spent a lot of time in municipal politics. We have volunteer ambulance service in that area that is run for the community in the county and in the city. There is a poison control centre that is run in the hospital in that area for the whole county. I do not see how in the world they could do a better job than they are doing right now. Our health people, our ambulance people are kept informed all the time. There is a 24-hour service and these people are constantly trying to do a good job and are aware of the need to be kept informed on all these drugs. They get the information for themselves if it is not available through ordinary channels.

Mr. LEDUC: May I say something? There is a trend in the provinces to have major control centres to which others can call in. If you take British Columbia, there are two major poison control centres, one in Victoria and one in Vancouver. There are 40 other hospitals joining in; they can call in if they need to. In Alberta you have two major poison control centres, one in Edmonton, one in Calgary, and 106 hospitals which can call in. Another example of that is in Manitoba where there is a poison control centre in the children's hospital in Winnipeg, and there are ten satellite centres across the province. The centres in Ontario know they can get very good information from leading centres such as the children's hospital in Toronto or Windsor. There is already that trend in each of the provinces to re-orientate the poison control program.

The CHAIRMAN: Are there any other questions, gentlemen?

Mr. ENNS: I move we adjourn.

The CHAIRMAN: If there are no other questions, we would like to thank Dr. Morrell and Mr. Curran as well as officials of his department for coming here today.

The only other witness that we have to appear before us is the provincial entomologist of Ontario who will be with us, we expect, on December 10. The only other witness, Miss Carson, has not replied to our request as yet. It is my hope that the steering committee will get together very shortly to start compiling an interim report dealing with insecticides and pesticides which we would hope to present to parliament before Christmas.

If it is the feeling of the committee, we will adjourn until the call of the Chair, and probably the next meeting will be on December 10. The Clerk asked me to remind you that you will be getting in the mail a fair amount of literature which was forwarded to us.

Mr. ENNS: On Tuesday there was reference made to a film which was described as being pretty excellent material of the portrayal of the development of a chemical or a pesticide. I suppose we have had sufficient evidence in the answers of the witnesses and in visits to the producers or manufacturers of pesticides, but perhaps the viewing of such a film would be helpful.

The CHAIRMAN: Would you like to have this brought up in the steering committee?

There is also one other film based on Miss Carson's book that we might consider seeing if she is not going to be available.

The meeting is adjourned.

APPENDIX "A"

PERCENTAGE DISTRIBUTION OF ACCIDENTAL POISONING
BY CLASS OF PRODUCTS
(1960)

Class of Products: All Ages	Cases	Per cent
Baby ASA	1,031	10.7
Household cleaners and polishes	972	10.0
Adult ASA and ASA compounds	952	9.8
Sedatives and tranquilizers	891	9.2
Paints and patching products	591	6.1
Laxatives and other digestive system remedies	583	6.0
Pesticides and insecticides & other garden preparations	579	6.0
Medications for external use	553	5.7
Cosmetics and other preparations for external use	544	5.6
Antibiotics, hormones and other special pre- scription drugs for internal use	498	5.1
Fuels and lubricants and combustion agents ..	413	4.3
Bleaches	358	3.7
Contaminated foods and non-edible berries, roots, fungi, etc.	351	3.6
Dietary supplements and reducing compounds	332	3.4
Cough and cold remedies	284	2.9
Writing materials and other misc. household products	277	2.9
Deodorants and disinfectants	248	2.6
Products unidentified on reports	233	2.4
Total	9,690	100.0

HOUSE OF COMMONS
First Session—Twenty-sixth Parliament
1963

SPECIAL COMMITTEE
ON
FOOD AND DRUGS

Chairman: Mr. HARRY HARLEY

MINUTES OF PROCEEDINGS AND EVIDENCE

No. 16

TUESDAY, DECEMBER 10, 1963

TUESDAY, DECEMBER 17, 1963

including
THE SECOND REPORT TO THE HOUSE

WITNESS:

Professor H. W. Goble, Provincial Entomologist of Ontario,
Guelph (Ont.)

ROGER DUHAMEL, F.R.S.C.
QUEEN'S PRINTER AND CONTROLLER OF STATIONERY
OTTAWA, 1963

SPECIAL COMMITTEE ON FOOD AND DRUGS

Chairman: Mr. Harry Harley

Vice-Chairman: Mr. Rodger Mitchell

and Messrs.

Armstrong,
Asselin (*Richmond-
Wolfe*),
Baldwin,
Cashin,
Casselman, Mrs.
Côté (*Longueuil*),
Enns,

Fairweather,
Francis,
Gauthier,
Gelber,
Howe (*Hamilton South*),
Jorgenson,
Macaluso,
Marcoux,

Nesbitt,
Orlikow,
Otto,
Roxburgh,
Rynard,
Whelan,
Willoughby.—24.

(Quorum 8)

Gabrielle Savard,
Clerk of the Committee.

Note: Mr. Basford replaced Mr. Cashin after the 17th meeting on December 10.

ORDERS OF REFERENCE

WEDNESDAY, December 11, 1963.

Ordered,—That the name of Mr. Mackasey be substituted for that of Mr. Macaluso on the Special Committee on Food and Drugs.

MONDAY, December 16, 1963.

Ordered,—That the name of Mr. Basford be substituted for that of Mr. Cashin on the Special Committee on Food and Drugs.

Attest.

LEON-J. RAYMOND,
The Clerk of the House.

REPORT TO THE HOUSE

THURSDAY, December 19, 1963.

The Special Committee on Food and Drugs has the honour to present its

SECOND REPORT

On July 26, 1963, your Committee was constituted with the following Order of Reference:

Resolved,—That a Special Committee be appointed to consider and report on (a) the hazards of food contamination from insecticides, pesticides, and other noxious substances; and (b) the safety and cost of drugs; that the Committee consist of 24 members to be designated later by the House; that the Committee be empowered to send for persons, papers, records, and to report from time to time and to print such papers and evidence from day to day as may be deemed advisable; and that the provisions of Standing Orders 66 and 67 be suspended in relation thereto.

Although your Committee has held 17 meetings, heard statements and recorded expert evidence, it was possible only to consider in detail the first part of its order of reference dealing with the hazards of food contamination from insecticides and pesticides.

For purposes of simplicity, the word pesticides is used in the report to mean both insecticides and pesticides.

1. GENERAL REMARKS

Your Committee examined the officials of various government departments involved in the use of pesticides. Representatives of the manufacturers, agriculturalists, academic experts, users of the products and consumers were also examined by your Committee.

The Committee feels generally that the dangers from the present use of pesticides to human health is small, if used as directed. There will always be accidental poisonings (there were a total of 3 reported deaths from pesticides in 1961 and 1962) and accidents from misuse. The legislation in Canada both generally and in relation to its enforcement appears to have protected to date the people of Canada from major catastrophes from pesticides. The dangers to wildlife are greater in proportion than to human life because of the smaller size of the wildlife in proportion to the amount of pesticide, and because of the more intimate and unavoidable contact from massive applications of pesticides such as received from air spraying.

While the Committee recognizes the fortunate lack of serious poisonings in Canada, it must be noted that long term effects of continuous daily intake of pesticides could cause illness particularly in the human. In the case of wildlife with a shorter life span, there is some evidence to show that long term effects may occur such as reduction of reproduction. It would appear from the evidence to date that such long term effects are unlikely in the human, because of the safety factors used in determining the legal tolerance levels.

2. GOVERNMENT CONTROL

Your Committee finds that the two departments of federal government most concerned with pesticides, mainly Agriculture and National Health and Welfare

are well aware of the problems and dangers involved, and are doing a good job under difficult conditions. There are four other government departments concerned to a varying degree with pesticides, namely Forestry, Northern Affairs and National Resources, Fisheries and National Defence. Up until one year ago there was little contact between these six departments in relation to pesticides. They have been meeting for the past year, informally as the "Inter-departmental Committee on Insecticides and Pesticides". Your Committee feels that these informal meetings have shown that a permanent Interdepartmental Committee is desirable.

3. RESEARCH

Your Committee has found that apart from industrial development research there is almost no basic pesticide research in Canada. A great deal of research is required in Canada on pesticide problems, e.g.

- (a) the effects on humans and/or wildlife relating to daily intake of pesticides—(long term effects of pesticides)
- (b) the interaction between pesticides themselves, and between pesticides and drugs in common use
- (c) effects of pesticides on reproduction.

The research area is extensive. The federal and provincial governments, universities, medical, veterinary, pharmaceutical and other teaching centres and the manufacturers of these compounds must all play a part in these studies, but these should be co-operative studies to make the most of limited facilities for research in an ever-enlarging field. One central agency should co-ordinate research.

4. EDUCATION

Your Committee found that generally speaking government and industry are well aware of the potential dangers from pesticides, but that the public does need education in these fields. More should be done in this regard. Directions and precautions on containers are of little use if they are not read by the purchaser.

5. RECOMMENDATIONS

(a) *To the Federal Government*

(1) The present ad hoc Committee on Pesticides of the previously listed federal departments should be placed on a permanent basis and strengthened with responsibility to report to a specific Minister of the Crown. This permanent committee should receive reports from the National Committee on Pesticide Use in Agriculture which is a subcommittee of the National Committee on the Co-ordination of Agricultural Services. In this way contact with all interested parties will be maintained.

The present Operations Committee of the federal departments which plan mass sprayings should be a subcommittee of this permanent committee.

It is hoped that the Committee on Pesticides will try to co-ordinate research on pesticides at all levels—federal, provincial and academic—in co-operation where applicable with the manufacturers.

Your Committee therefore recommends:

"That a Committee to deal generally with the use and effects of pesticides be established with representatives of the following federal departments: Agriculture, National Health and Welfare, Fisheries, Forestry, Northern Affairs and National Resources, Defence and National Research Council. This Committee should meet on a regular basis, at least every six months, and report to the Minister of Agriculture."

(2) At the present time pesticides, not registered under the Pest Control Act, may be purchased outside Canada and brought into Canada for the

personal use of the purchaser. The Committee feels this is contrary to the purposes of the legislation and therefore recommends:

"That the Pest Control Act be amended to prevent the importation of pesticides not registered under the Act, from a country outside of Canada."

(3) Labelling was discussed at some length by the Committee. The wording "Harmless if Used as Directed" places the wrong approach to the problem. The problem of size of packages and labelling was discussed. Your Committee recommends "that the Committee on Pesticides study the problem of labelling and suggests that—

- (a) all labels for use in Canada be at least in French and English;
- (b) for protection of the public, contents should be fully listed, as well as first aid treatment and antidotes, if available for the specific contents;
- (c) where a trade name is used, the contents of each container so labelled should be the same. One trade name should not cover various types of pesticides of varying toxicity;
- (d) Pesticides where possibly harmful should be so labelled. The Committee suggests, for example,
Mildly toxic pesticides to be labelled

—"DANGEROUS UNLESS USED AS DIRECTED"
(in black letters)

Moderately toxic pesticides to be labelled

—"DANGEROUS UNLESS USED AS DIRECTED"
(in red letters)

Severely toxic pesticides to be labelled

—"DANGEROUS UNLESS USED AS DIRECTED"
(in red letters plus a red skull and X-bones
above the warning)"

(4) For previously given reasons your Committee recommends:

"That pesticide research should be encouraged at all levels, and co-ordinated where possible by the Committee on Pesticides. To this end your Committee recommends that the federal government give consideration to grants to aid pesticide research."

(5) Enforcement of Federal regulations should be strict and followed by prosecutions where warranted.

(6) For purposes of encouraging examinations in the most recent analytical methods,

Your Committee recommends:

"That the Committee on Pesticides study the requirements in adequacy of staff, equipment and facilities of the federal government departments in relation to their duties re pesticides."

(7) As this matter is under federal and provincial jurisdiction it is recommended that the mutual problems pertaining to pesticides be discussed at joint meetings of interested departments. (See next para.)

(b) *Recommendations to the Provincial Governments*

Your Committee recognizes this subject is under federal and provincial jurisdiction and that to be effectively dealt with it is necessary that the provinces give consideration to the following matters.

Recognizing this, we suggest that federal representatives at joint federal-provincial meetings such as Health Department and Agricultural Department, place the following on the agenda for discussion:

(1) Consideration has been given to licensing outlets for pesticides for agricultural use. Your Committee feels that the farmers of Canada are generally well informed and recognize the dangers of pesticides. One of the main dangers may lie in the indiscriminate use by home growers and house-holders.

Your Committee suggests that consideration be given to licensing of commercial sprayers of pesticides based on proper training and expert supervision.

(2) It is recognized that Extension Services of Provincial Governments' Department of Agriculture will obtain information re treatment practices and possible dangers of pesticide contamination in certain areas which are unknown to the Federal Food and Drug Directorate inspectors. It is to be hoped that such information will be given freely to the federal department based on the mutual co-operation and respect for consumer safety by these bodies. Your Committee recommends "the study of mutual interest areas by Provincial and Federal government authorities, in an effort to improve the present relationships, with the aim to providing consumer safety in foods and the co-operation and respect of the producer."

(3) As discussed under recommendations to the federal government the Committee hopes for close co-operation between federal and provincial authorities in the following fields:

- (a) research, as co-ordinated in agreement with the Committee on Pesticides to avoid duplication;
- (b) setting standards and procedures for Poison Control Centres;
- (c) all poisonings to be made "NOTIFIABLE";
- (d) the education of the public, and to continue to improve their excellent educational services to the producer via their extension branches of the Provincial Departments of Agriculture.

(c) Recommendations to Manufacturers

(1) The Committee commends the manufacturers for their co-operation in this study.

(2) The Committee encourages the development of safer non-toxic pesticides, particularly those for use in the home. It is obvious the companies are working toward this goal. Their efforts in the direction of non-persistent pesticides should be encouraged.

(3) The development where possible of antidotes and safety measures regarding specific pesticides should be promoted.

(4) The Committee commends those manufacturers who support research at the academic institutions and encourages this support. Co-operation in co-ordinating research through the Pesticide Committee and their continued participation in the National Committee on Pesticide Use in Agriculture is solicited.

(5) Your Committee recommends the study of spill proof containers. Household sprays in particular should be as "child-proof" as possible.

(d) Recommendations to the Public

Your Committee feels that there is reasonable protection from adverse effects from the general use of pesticides. The Committee strongly recommends that the public carefully follow directions as outlined on the container, as these are valueless in protection as long as they are ignored. Educational programs should be encouraged to discuss these matters.

Your Committee wishes to record its appreciation to the officials of the federal and provincial departments and to the expert witnesses who appeared before it and contributed to its work.

The Committee finds that it will not be able to complete at the current session of this Parliament its inquiries into the matters referred to it for report and, accordingly, recommends that this Committee be re-established and appointed early in the next session of this Parliament to resume the studies and continue the inquiries initiated by this Committee.

A copy of the Minutes of Proceedings and Evidence is appended. (Issues No. 1 to 16 incl.).

Respectfully submitted,

HARRY C. HARLEY,
Chairman.

MINUTES OF PROCEEDINGS

TUESDAY, December 10, 1963.

(17)

The Special Committee on Food and Drugs met today at 9:50 a.m. The Chairman, Mr. Harry C. Harley, presided.

Members present: Messrs. Baldwin, Côté (*Longueuil*), Enns, Fairweather, Harley, Marcoux, Nesbitt, Otto, Roxburgh, Rynard, Willoughby—(11).

In attendance: Professor H. W. Goble, Provincial Entomologist of Ontario, Guelph, Ont.

The Chairman announced that Miss Rachel Carson will be unable to appear before the Committee on account of ill health, but sent copies of testimony she gave a few months ago before committees of the United States Senate.

On motion of Mr. Rynard, seconded by Mr. Nesbitt,

Agreed—That the two statements given by Miss Rachel Carson before committees of the United States Senate be printed as appendices to this day's proceedings. (*See Appendices "A" and "B"*)

On behalf of the Committee, the Chairman undertook to write Miss Carson to thank her for having sent these papers, to express regret for her not having been able to appear before the Committee, and wishing her prompt and complete recovery.

The Committee also passed a vote of thanks to the Manufacturing Chemists' Association, Inc., of Washington, D.C. for having supplied to each member of the Committee, free of charge, a number of interesting and useful publications about Pesticides.

The Chairman introduced Professor H. W. Goble, Provincial Entomologist of Ontario.

Professor Goble read a prepared statement, on pesticide use in farm production in Ontario; copy of his statement was distributed to the members. He was questioned thereon, and on related matters.

The questioning concluded, the Chairman thanked the witness for his informative statement.

The Chairman announced that the steering committee would meet Thursday evening to prepare a draft interim report.

At 11:15 a.m. the Committee adjourned to meet *in camera* at 9:30 a.m. Tuesday, December 17.

TUESDAY, December 17, 1963.

(18)

The Special Committee on Food and Drugs met *in camera* this day at 9:40 a.m. The Chairman, Mr. Harry C. Harley, presided.

Members present: Messrs. Armstrong, Baldwin, Basford, Côté (*Longueuil*), Fairweather, Francis, Gelber, Harley, Marcoux, Nesbitt, Otto, Roxburgh, Rynard—(13).

The Committee considered a Draft Report to the House recommended by the Subcommittee on Agenda and Procedure. The said Report was amended and adopted unanimously as amended.

The Committee instructed the Chairman to present the said Report to the House as the Committee's Second Report.

At 12:00 a.m. the Committee adjourned.

Gabrielle Savard,
Clerk of the Committee.

EVIDENCE

TUESDAY, December 10, 1963

The CHAIRMAN: Gentlemen, we have a quorum. We will now start the meeting.

First of all I would like to read a letter from Miss Rachel Carson. The letter is addressed to the Clerk of the Committee who forwarded an invitation to Miss Carson to appear before the committee.

November 27, 1963

Dear Miss Savard:

Thank you for your letter of the 18th. I am very glad indeed to hear that your House of Commons has appointed a Special Committee to consider the pesticide problem. It would be a privilege to meet with this Committee and I sincerely appreciate being invited to do so even though I cannot accept. I have recently been suffering from some rather troublesome arthritic difficulties and therefore I am compelled to hold my traveling to a minimum. I hope you will express to the Committee both my appreciation of the invitation and my deep regret that I cannot accept it.

For whatever possible usefulness it may have I am enclosing copies of testimony I gave a few months ago before committees of the U.S. Senate.

Sincerely yours,
(signed) Rachel Carson.

I have here copies of the testimony that she gave before the Committee on Government Operations Environmental Hazards, Control of Pesticides, and other Chemical Poisons, and another statement of Rachel Carson's before the U.S. Senate Committee on Commerce. If it is the wish of the committee we could have these printed as an appendix to today's meeting. It is moved by Mr. Rynard, seconded by Mr. Nesbitt.

Motion agreed to.

Before we move on to today's business we should, on behalf of the committee, move a vote of thanks to the Manufacturing Chemists Association of Washington for having supplied each member of the committee, free of charge, with a number of interesting and useful publications about pesticides, which I am sure you have all now received through the mail.

If it is the wish of the committee, I will write Miss Carson a letter to express our appreciation of her forwarding these papers and our regrets at her ill health. We will wish her a speedy recovery.

This morning we have with us Professor Goble who is from Guelph, Ontario. He is the Provincial Entomologist of Ontario as well as a member of the Department of Zoology of the Federated Colleges of Guelph. He has prepared a statement and we will have the copies passed around.

Professor H. W. GOBLE, (*Department of Zoology, Federated Colleges, Guelph, Ontario*): Mr. Chairman, the following is a short report on methods of preparing for growers the recommendations for insect and plant disease control. It indicates the degree of provincial (Ontario) responsibility in this work. It deals only with insecticides and fungicides related to plant and animal production.

The value of insecticides when used in public health has been shown by Dr. A. W. A. Brown. A brief outline on the need for pesticides in animal and plant production is included here.

High yields and quality of agricultural produce are required to maintain Canadian markets and to expand or maintain the export market. Apple production has increased approximately 1,000,000 bushels a year in Ontario based on the last five-year average.

I could not get an average figure on, say, four or five hundred bushels because of the way the acreages are recorded in trees. I think Mr. Roxburgh knows what I mean.

Such yields of high quality fruit were not possible with lime sulphur, fine sulphur, and lead arsenate. The average yield of potatoes per acre in Ontario was 97 bushels in 1941 and 320 bushels in 1962. Quality is high and, according to checking by the food and drug directorate, while some permissible residues exist, they are within the tolerance. Production like this was not possible without insect control better than was obtainable before 1946 when D.D.T. and other compounds were introduced to the grower. Apples are exportable to the U.K. and the continent only when certificates are issued by the Canada Plant Protection Division showing they are free of apple maggot. It is not possible to produce apples free from maggot in Ontario without properly timed insecticide sprays.

When the 1947 spray calendar for apples is compared with the 1963 calendar, some interesting data are revealed. In 1947, a grower, if he used all the sprays recommended, applied 90 pounds of lead arsenate per acre per year. In 1963 several choices of spray schedules were available. A typical program would give 6 gallons of oil emulsion, 2½ pounds of a miticide before bloom and 2 pounds of guthion, 12 pounds of D.D.T., and 15 pounds of lead arsenate per acre (pounds of actual insecticide) or a total of about 30 pounds of insecticide.

Under certain conditions some birds have died as a result of insecticides. What is more disturbing, however, is that the losses from pest birds (red-winged blackbirds and starlings) on fruit and corn appear to be increasing. Sweet corn and fruit require heavy insecticide application.

Provincial Recommendations (and control over use)

No material is recommended unless it is registered by the pesticide unit of the Canada Department of Agriculture. A committee including the entomologists and plant pathologists of the Canada and Ontario departments of agriculture and the horticulturists and agronomists of the Ontario department of agriculture, especially those in extension, examine the research work of the year and develop from the results the next year's recommendations for insect and plant disease control. Representatives from the departments of health of both governments, wildlife (Ontario), apiculture, and the pesticide unit, Ottawa, as well as one representative of the chemical industry are invited. The recommendations are revised each winter and are distributed to the growers as protection guides, spray schedules, etc. These do not include all registered, and thus available, pesticides.

What control do we have over what a grower applies? Fortunately forage, hay and pasture crops rarely require insecticide sprays. Only rarely are grasshoppers a problem. There is no legislation to prevent a grower using double dosages or applying materials too close to harvest. Generally, either of these will increase the cost without corresponding returns. The safe and proper uses of pesticides are emphasized at all extension meetings. With few exceptions, growers realize that they are jeopardizing their own industry if they do not follow the committee's recommendations as the crop produced may have residues that will contravene the Food and Drug tolerance.

The number of days required between treatment and harvest where an insecticide is used on a food crop or on forage and pasture is given in each recommendation. The required time depends more on the quick "break-down" of the chemical than on its actual toxicity. An example would be that D.D.T. is not recommended at all on lettuce in control of the insect that carries a virus to this crop. Phosdrin, a very toxic insecticide, may be safely used up to three days of harvest. The three day limit is based on research over a period of years. The trend is to this type of product even though the chemical itself is very toxic at the time of application.

Trend in Recommendations

A few years ago it was common for growers to claim that they would not apply the highly toxic organic-phosphate insecticides. Many of these are permitted close to harvest because they are not persistent like the D.D.T. types. It would appear now that growers have learned to use these toxic substances safely and thus reduce residues on harvested crops.

The trend in both use and recommendations is away from the persistent chemicals that accumulate in soil and animal tissue, such as the chlorinated hydrocarbons, to the quick "break-down" organic phosphates and low toxicity carbamates such as Sevin. The 1964 recommendation for cutworm control has been revised and the aldrin, dieldrin, and heptachlor recommendation has been replaced by poison-bran bait which was the standard recommendation for many years. Will growers change back to a hand-treating method? We cannot force them to do so. Should control over application on an individual's farm be under regulations?

Should we "educate" or "regulate" or is there a working combination?

The CHAIRMAN: Thank you very much, Professor Goble. Would anybody like to ask questions of Professor Goble?

Mr. ROXBURGH: On page two of your brief you made the following statement:

Under certain conditions some birds have died as a result of insecticides. What is more disturbing, however, is that the losses from pest birds (red winged blackbirds and starlings) of fruit and corn appear to be increasing. Sweet corn and fruit require heavy insecticide application.

What is the reason for that statement?

Professor GOBLE: You have asked me a question which I have not thought of before. The reason for the statement was that in the normal application of insecticides in the fields I have not seen any dead birds or animals, and I have been to a great many orchards over a period of time. That was the thought I had in mind.

You asked another question which I cannot answer. I believe that the heaviest rate of insecticide is applied to orchards in comparison with any other crop. However, we do not seem to find any dead birds in orchards.

Mr. OTTO: So that what you say is that birds seem to thrive on insecticides?

Mr. NESBITT: I am not quite clear on this sentence "What is more disturbing, however, is that the losses from pest birds (red winged blackbirds and starlings) on fruit and corn appear to be increasing". Are you implying that these birds are eating fruit and corn?

Professor GOBLE: Maybe I was misleading in my wording. What I meant is that insecticides do not seem to be reducing their number. Of course, I do not think the insecticides are increasing the numbers of birds but we do know that the losses have not been so great. Something like \$1,500,000 is lost in corn

to the blackbird and starling group. I understand that the cherry crop, or what was left of it, took an awful beating from the birds this year. I wonder therefore if we are killing as many birds as has been claimed.

Mr. ROXBURGH: There was 100% damage in the cherry crop.

Mr. NESBITT: If they have no insects, they have to eat other things.

Professor GOBLE: I do not know whether that has anything to do with the switchover to corn.

Mr. WILLOUGHBY: Mr. Chairman, this is very interesting. It brings out a lot of the points we have already been faced with at different meetings. I think the last sentence in this brief is the one that is really the crux of the whole report. "Should we educate or regulate or is there a working combination?" I would like to know what Professor Goble has to suggest here.

Professor GOBLE: When I put this last sentence in I wondered whether I was not actually asking for some questions which I would not quite be able to answer myself. Offhand it was one of the most important questions, as you yourself indicated, Dr. Willoughby. I have been a little concerned—and I do not know whether you can regulate this—with the fact that once in a while a grower will tell you he has been spraying on some material, and we tell him that it is too close to the harvest and that he should not spray, let us say D.D.T. or dieldrin.

We do not have any way in which we can do anything about that situation until he offers that crop for sale. I think I am quite correct in this and I believe you have had quite a few discussions on this, that a grower can apply anything he likes on his farm as long as he does not offer the produce for sale. In other words, the food and drug directorate cannot touch the crop until it is offered for sale. We do not find that this happens too often but once in a while it does.

For instance, we once talked to a farmer when we found some D.D.T. on asparagus. We were not sure whether he was going to change to another material. The material he used was cheap but it was not recommended. Later, we heard he did not use it.

Mr. NESBITT: In that regard, Dr. Goble, often I find that when one buys celery commercially, and opens the heads, one often finds large quantities of a kind of bluish substance which might copper sulphate. You often find it in commercially grown celery. Would that indicate that some pesticide or fungicide was being used and had not disappeared?

Professor GOBLE: I would say that if it is bluish in colour, it quite probably would be one of the copper base fungicides because on celery there would be more fungicide applied than insecticide. I am not familiar with the insect originating the blight or leaf spots. I do not think the fungicide is being used as it was a few years ago, but it is effective material for disease.

Mr. NESBITT: Quite often one finds such a substance in that quantity. Is it harmful?

Professor GOBLE: Not copper sulphate.

Mr. RYNARD: I should like to ask the professor whether all the foods are checked? Take for instance this example that you were citing where you know no way of stopping this fellow from doing it. Do you check his product when he sells it?

Professor GOBLE: Provincially we have no legislation that can do anything with this product. It has to go to the food and drugs directorate for policing.

Mr. RYNARD: Do they check all their samples?

Professor GOBLE: No, they pick up samples regularly on the markets here and there.

Mr. RYNARD: It would therefore be possible for a farmer to spray his crop with a poisonous spray and to do so too closely to the harvest. Therefore there is a definite loophole there. It must be controlled or regulated some way.

Professor GOBLE: In looking at the residue data which we get from the food and drug people, in picking up samples on the market—some of them would be imports but we look especially at our own fruits and vegetables—we find that the residues are almost always quite under the permissible tolerances; in other words for aldrin it is a tenth of a part per million; for d.d.t. a seventh part per million—this seems high but in most cases it is so. The dairy products are not allowed anything. It is very rare that any of them go over this. Sometimes we see some products that are just slightly over this tolerance.

Mr. RYNARD: It is impossible, under the present regulations, that you would be buying an article that was far too high in pesticides?

Professor GOBLE: It is possible that it would go over what the food and drug directorate set as a safe limit.

Mr. RYNARD: Then you cannot say to this farmer "you cannot do this"?

Professor GOBLE: There is no control until the crop is offered for sale.

Mr. RYNARD: With milk, you make a test every time on every sample that goes in.

Professor GOBLE: Not for pesticides.

Mr. RYNARD: But for antibiotics, which is similar. Therefore, I think there is a much bigger loophole here than in the other case.

Mr. OTTO: On page two of your brief you say that no material is recommended unless it is registered. What effect does this recommendation, or lack of recommendation, have on sales of certain pesticides? Is it a fairly effective recommendation?

Professor GOBLE: I think it has quite an effect although there are some cases where growers use materials which we do not recommend. I would think that in most cases where they are using materials which are not recommended, they would be registered products and according to the manufacturers they are safe to use. In the cases where we do not recommend them we think there is another better method.

Maybe I could give you an example. In the bean production there is a material that can be applied to the soil. It is a pesticide for the seed at planting time which will control the grasshoppers and leaf beetles. It is a moderately expensive insecticide. Normally we only have to spray for insects on beans once every three or four years, and we think the grower should wait until he has a problem and then cut down the insecticide load. I think that the department by not recommending it tends to limit the sale a little. The company promotes the sale and we know they would like us to recommend it. They send data to us all the time.

Mr. OTTO: It is advantageous to the manufacturer to have your recommendation, is it not?

Professor GOBLE: Yes. We have our meetings around the middle of November. Mr. Roxburgh knows the people who come from his county. In Mr. Roxburgh's constituency there is quite a strong entomological laboratory group with whom we work.

Mr. BALDWIN: Going back to the question which Dr. Willoughby asked, I think that you have summed up here what we have learned, that there are two points where we exercise control; firstly, that under the Pest Controls Act only such products as are registered may be brought on the market; and, secondly, after everything is completed, the food and drug people can look at the resulting product to see to what extent it should be saleable. In between

there are no compulsive recommendations and advice through education. You ask whether there should be some measure of compulsory regulation in between these two points. The fact that you ask these questions suggests that in your mind there might well be some additional regulation. Am I correct?

Professor GOBLE: I do not know whether it would be possible to enforce a regulation at the farm level or not. I had an amusing case a year ago this summer where a grower applied aldrin by mistake to wireworms in potatoes three or four times the dosage. The information came to us from the agricultural representative in the county and the food and drug directorate was informed. They sent an inspector out and finally gave him permission to sell the potatoes only for seed. However, we really wanted him to plow the potatoes under and to get rid of them, but we did not have the regulations to force him to do that. We knew he had contravened the law, yet he could claim, if the potatoes were in long enough the material would break down in the soil and it would meet this requirement of a tenth part per million which he is allowed by the food and drug law. It was handled by giving him permission because the content did not come down to a tenth part per million. Whether we should have had the right to make him plow those potatoes down, I do not know.

Mr. WILLOUGHBY: I have a supplementary question in regard to the same point. It has been suggested here that commercial spraying should be done by licensed commercial sprayers. Is that what you mean by the regulations?

Professor GOBLE: No, I was thinking of someone who applies the material not in accordance with the recommended use. In other words, when we recommend a material we say "not within fifteen days of the harvest", knowing there may be too much residue left if it is applied ten days before harvest—although there is a fair leeway there and if we knew he did put the material on too soon, we could do something before he offered it for sale. I think that where crops go to large produce outlets there seems very little difficulty because the chain stores and the large distributors are very concerned about the possibility that the food and drug directorate might pick something up on their counter.

There was a case in the States last week where some cauliflower could not be sold because it had too much residue. The big buyers know that and no one will touch them, there is no market for them. I think the possibility is greater of a small grower getting these products out, but the processing companies and the larger ones are extremely cautious. I am quite sure they will not take a chance to put vegetables with residue on the market because the food and drug directorate can pick up material a year later in the can, and if they find it contains a certain amount of residues, they will confiscate it without any hesitation.

Mr. ROXBURGH: Mr. Baldwin asked the question whether control over application of sprays on individual farms should be regulated. Do you think that is practical? As you know, we have in my county a very good set-up, but whether it is like that all over the country or not is a different proposition. Do you think it is practical to make regulations that an inspector should inspect a certain crop and if it has too much of a certain substance it should be destroyed, just the same as you would have an inspector do an inspection of maggots? Would that not come under the farm marketing act?

Professor GOBLE: Yes, possibly it would. Of course there would be one difficulty with a crop that might be left for a greater length of time with a greater breakdown type of chemical.

Mr. ROXBURGH: They would have to make a double inspection.

Professor GOBLE: This would not apply to milk or any products like that.

Mr. ROXBURGH: I was thinking more of fruit and vegetables. Do you think that with your organic phosphates and your carbonates, and similar products

that are being brought out, there is little if any chance of the poison in the pesticides doing damage to the public?

Professor GOBLE: I do not think there is. I think there is a fairly safe limit, and I might say this—there was a talk which I was asked to give a little while ago to a group in Guelph. I spent quite some time going through the literature and looking data up on residues that were present. I had some data from the food and drug directorate which had not gone out to the public. It seems that in almost all cases they were well below the permissible tolerance.

Maybe that does not answer your question. It is possible for one lot of carrots to go out although they have a spray which is above the tolerance level. We tried to tell the growers, "Do not let this happen; it can do more damage to you and to all the other carrot growers than anything else that could happen".

We have another problem with apples which is a little difficult. We have a different requirement for tolerance for arsenic than they have in England. This has been a bit of a problem in our export market. I do not think any regulation is applied there but we are permitted two parts per million of arsenic in the States and in Canada, while only one is permitted in the United Kingdom. We have seen analyses on various apples—maybe your own, Mr. Roxburgh—and some of them run a little over one part per million. Rarely do you see any running towards two parts per million which is considered to be the safe limit by the food and drug people in Canada and also in the States.

Mr. ROXBURGH: Do you think that a form of national education would play a big part in this, not only in the agricultural end of it but maybe in the schools themselves? It has been pointed out by the previous witnesses here that if there is damage it is generally done by the smaller grower, or the backyard farmer rather than by the commercial grower himself who knows the situation and the likelihood of the extra cost, and all these other angles that figure in his business. If that is the case, there is not too much control there and it is pretty hard. Do you not think that an addition to our educational program would be of benefit, or what ideas do you have on this?

Professor GOBLE: I think so, and I would go further. Without knowing too much about this except the organization in general, I would think that the B.C. fruit tree growers would be concerned if any of their products were over the tolerance, not because they were going to lose that fruit or would have to dump that fruit but because of what was done to the British Columbia tree fruit growers if it were found that they were contravening the tolerances.

We could say the same for onions. I am referring to Bradford where there is an export market. These growers are quite concerned about that. I would say that it is rarely that they are above the tolerance. I do not think that the large growers can take a chance in this respect.

To come back to the export market of apples to the United Kingdom and their requirements for a tolerance of one part per million of arsenic and two parts that we allow in Canada and the United States, in point of fact they do not have apple maggots over there. That is why we have regulations on inspection. They do not need arsenic and so they say that their growers do not need more than a tenth of a part per million. If they required insect control, it is possible that they would find an added safety factor of two parts per million might be quite all right.

Mr. ROXBURGH: Has this caused trouble in sending apples for export? Have any been turned back?

Professor GOBLE: As far as I know none have been turned back, but they are taking a good look at them before the shipments go out. I believe they have a nice working arrangement with the United Kingdom, as I have heard from our organization in Ontario.

Mr. OTTO: Someone should introduce them to apple maggots.

Mr. COTE (*Longueuil*): On page two of your brief you say that "no material is recommended unless it is registered by the pesticide unit of the Canada Department of Agriculture". Is there any pesticide in the market that is not registered?

Professor GOBLE: No, they are all registered. However, a product may be registered by the Canada Department of Agriculture for use but our local authorities—in other words provincial authorities, and this would apply to the other provinces, although I am using Ontario as an example—may not be recommending it here. It may be registered. There is quite a number of registered products that are not recommended by the provinces, but the companies can sell those.

Mr. COTE (*Longueuil*): It would not be recommended by your provincial organization?

Professor GOBLE: It may be a new product where the safety factor has been pointed out but we are not sure whether it is useful. In many cases it is not recommended because of the ensuing damage to the crop. For instance, there may have been large claims of crop damage on onions where the seed was injured. There might not have been residue when the crop was harvested but there was injury to the seed. In those cases we will not recommend it. We know there are two materials which we recommend, why then put in a third?

Mr. COTE (*Longueuil*): According to the way I read this, there are some products that are not registered.

Professor GOBLE: I am not sure I quite understood you, sir.

The CHAIRMAN: Mr. Cote says that he understands this sentence to mean that it is possible that there would be a material that was available that was not actually registered.

Professor GOBLE: Oh, I see. I understand that a grower can bring in any material that is registered in the United States and use it in Canada on his own farm. Some of us have wondered about that, the way the regulations stand. I understand that a licensed pest control operator can do the same.

Mr. COTE (*Longueuil*): They could buy these products in Canada that they cannot buy in the States?

Professor GOBLE: It may not even be registered here. That is the only case where you have a known registered product in Canada. A fellow would say "I cannot sell it to you but I can bring it into Canada and use it in my own farm". If any residue were found the crop could be confiscated, but the pest control operators have a right to use it if they want to. In Ontario we have the pesticides act which is administered under the Ontario department of health regulations. All those people in pest control work must be licensed, but this does not include agricultural production. In other words, if Mr. X has a big sprayer and an orchard, and his neighbour has a small five acre orchard and a poor sprayer and is hesitant to put on some of the very toxic materials himself because the sprayer is not very safe, he gets his neighbour to come over and do the spraying for him. His neighbour does not have to be licensed to do that. I should like to see a regulation requiring a man to be licensed. If it is a case of cockroaches or ants or termites, such as you might have in Ontario, only licensed operators under the provincial pesticides act are allowed to operate.

Mr. COTE (*Longueuil*): I do not see why pesticides have to be registered under the pesticides act if anybody can buy the material in the United States and bring it up here. There should be a control over that. If those pesticides are not permitted into Canada, and they are not registered, a farmer can go to the States, but them there, and bring them here without any control. I do not see why the other materials that are sold here should be registered.

Professor GOBLE: I am quite sure that this is right, although I would like to hear someone from the legal profession—maybe Mr. Nesbitt—speak on whether this is so. I am quite sure it is right, that they can bring in this material for their own use.

The CHAIRMAN: It has come out in previous testimonies that a person can go to the United States and buy it there. As long as he uses it himself, there is no law to prevent him from doing that.

Professor GOBLE: I understand also that if he is a licensed pest control operator and he brings the material in and uses it, let us say, on my house, if he bills me for application so much, and for the chemical so much, he is contravening the act, but if he just charges \$10.00 for doing the whole job he is within the law.

Mr. COTE (*Longueuil*): That is the same thing.

Mr. RYNARD: I was wondering about two things. In the first place I wonder if my suggestion would not give us a lot of security. They talk about the big sprayer—and Mr. Roxburgh, the big farmer, maybe knows more about this than I do—but if this fellow is intelligent, he must be because he would not stay in business if he was not, what in the world is wrong with granting that fellow a licence every year? The same thing is done in public health, so what is wrong in doing it in agriculture? The only thing you have got that prevents him from contravening the law is, as I see it, a financial loss. You have got to catch him if you are going to make him suffer that financial loss. It seems to me that you would introduce a feeling of security to all the people and it would not hurt him a bit, if you granted him a licence. He might be rather proud and happy to have a certificate, which might cost him, let us say a buck, saying that he knows how to do this spraying. It would probably make him a little more careful than if he did not have anything. I do not see anything wrong with licensing those people. We do it in public health, why should we not do it with the farmer? I do not think it would be a nuisance. We have an agricultural representative going around. He knows the farmer is doing his work fairly efficiently.

In my own county there are truckloads of peaches coming out from the Niagara peninsula and they are sold on the open market. There are certainly no food and drug men checking those. These peaches are sold in the market places and tourists from all around come in and buy them. There is no protection for those people. I do not think that is right. I think that we could improve the situation a lot and make everyone a lot happier if we licensed these growers.

The other thing I wanted to dwell on is that we have been developing those insecticides and sprays at a good rate. This has increased our agricultural production immensely. I wonder if our research department has not slowed down in introducing plants that would be immune to some of those pesticides and if we are not neglecting that end of the expense of producing chemicals.

Professor GOBLE: The answer to the last question would be in Dr. Glen's report in which it is said that 80 per cent of the research work done in Canada is other than on insecticides. I feel we need a little bigger per cent spent on programs for a grower, and perhaps we could reduce work on the chemicals a little bit. We are thinking all the time of all we can do to reduce the insecticide load. We want to do that wherever we can. If we could get chemicals that work a little better as well as increase our biological control work, we would be happy. The percentage of work done in Canada, as compared to the States, is away over to the side of control other than chemical. I am quite sure you are right, Dr. Rynard.

Mr. RYNARD: Somewhere in your brief you mentioned the virus that attacks lettuce. I wonder if a lettuce could be developed that did not need to be sprayed.

Professor GOBLE: The six-spotted leaf hopper is the insect that spreads this virus. That is how entomology gets into the picture. That is the reason why lettuce is sold at such high prices sometimes.

Mr. RYNARD: What is your opinion about this licensing of which I spoke?

Professor GOBLE: It would mean that every farmer would have to be automatically licensed. Would that help the situation? We would be automatically going to them all and licensing them. Perhaps it would be better to have some type of examining board. If we licensed them all, such a license would not mean very much.

Mr. RYNARD: We do the same thing with milk. We check the milk and then we issue a paper saying that their milk has been up to the standard. If it has not been up to the standard, it is rejected. This in effect is licensing.

Professor GOBLE: The dairy people are thinking in terms of being able to check milk for residues. The chlorinated hydrocarbons are the persistent residues and the fat soluble ones. I know they do not do so at the present time except where the food and drug directorate looks at it. They are thinking about analytical methods by which they can check the milk for these chemicals as well.

Mr. RYNARD: Then there was the other point of people who sell their produce in open markets. You appear to have no control over them. They come 200 or 300 miles into tourist areas in the summer and in the fall bring truckloads of peaches, and so forth.

Professor GOBLE: I can only answer that by saying that the food and drug people would be checking this area proportionately to other areas.

Mr. ROXBURGH: The inspection which was done in Ontario, I believe, was a temporary one, when they came into the orchards and checked for the amount of residue. I have been away from this area this year but I have the impression that within the last two or three years there was just an experiment being carried out and some orchards were inspected. Am I correct in thinking that this was a temporary experiment?

Professor GOBLE: Those were the food and drug people. In the Leamington area at one time the food and drug inspectors picked up samples and sent them in to the residue laboratory for analysis. I was told that a grower whose produce was over the residue tolerance would get a letter back telling him about it. If they picked up a sample at your place and you did not hear from them, it means you must have been within the tolerance.

Mr. ROXBURGH: Now you mention it, I remember. You are right.

Professor GOBLE: They carry those inspections out each year, picking out samples here and there all across the country. That is what I was hoping was the case with the peaches going north, that there would be spot checking. You have to admit that some of them can get by, and yet we do not think that with this program there is much likelihood of there being much residue over the permissible tolerance. The spray program in peaches has changed, and you find D.D.T. appearing again, but it is almost eliminated. Sevin is permitted and it is a chemical that is as safe as a fungicide.

Mr. OTTO: You said, Professor Goble, that some of the crop might get through although it was over the tolerance level. Taking into consideration that most farmers know or suspect that their crop might be tested, the professor who tests it, or the food and drug inspector, what percentage of the crop do

you think could get through that might have more than a tolerable limit; would it be one-tenth of one per cent, or a hundredth of one per cent, or would it be 10 per cent?

Professor GOBLE: I would not be able to answer that question. I would think it would be very low, part of one per cent, but I could not answer it.

Mr. OTTO: My next question concerns educating or regulating. I am going to present this question in the light of some of my experience with farmers in a different capacity. I found many farmers were very concerned with their land. In most cases it is possible for the farmers to sod their land, and then get four times the price of the farm just from the sod. However, no one would consider doing this because it would waste the land. In the light of that, do you think that farmers are as a rule people who are aware of and concerned about the effect of pesticides and insecticides to the extent that an educational program would be as beneficial as a program of regulatory licensing?

Professor GOBLE: I think it would. I think we should have an increased number of samples being picked up by the food and drug inspectors rather than a double policing.

Concerning residue testing laboratories, there has been discussions in Dr. Hurtig's national committee whether some of us should be on it, and I am of the opinion that to have regulations in Ontario requiring us to pick samples here, and not have them say in Newfoundland or Quebec, would not be a good idea. In other words once a group of growers in an area know that someone is around picking up samples of residue, it has a great effect on them. I think that that type of warning to the farmers is good along with an educational program which would inform them on how to meet these regulations and how to control these plant diseases. Generally speaking insecticides are very toxic materials. I do think you need this prodding once in a while, so that the farmers know that certain materials are going to be picked up if they do not stay in line.

Mr. OTTO: From your experience are farmers receptive to recommendations or to an educational program? Are they concerned about it, and once they are convinced that it is a good thing, good for the nation or for their product or for themselves, do they tend to follow recommendations or instructions or regulations?

Professor GOBLE: We think so.

Mr. OTTO: It seems to me there are very few fly-by-night operators that try to make a dollar on it without serious qualms.

Professor GOBLE: Yes, I also think so. I think that, concerning this grower of potatoes that I referred to, he was a sort of weekend farmer. It was a straight mistake on his part. He did not look at his bill from the co-op. It is from this bill that they discovered he was using all this aldrin. Probably he put on more of this aldrin than all his potatoes were worth.

Mr. MARCOUX: I was listening to the comments on the value of spot checking and I remembered that in my own constituency we had a baker who used to bake small two-pound loaves of bread and big two-pound loaves of bread. I asked him why, and he said that in some cities they check if the loaves weigh two pounds or not while in other places they do not check. It is absolutely true.

The other point you were talking about was education. I am afraid I do not quite understand all the terms you use here on page three of your brief. You say that the improper use of pesticides is emphasized in all the extension meetings. What are extension meetings and how frequently are they held?

Professor GOBLE: Extension meetings are meetings where the fruit and vegetable producers meet with extension specialists who call them together for educational purposes. Some of those meetings relate to fertilizers or to insect

control. They are informal types of meetings and they meet for the purpose of education on what fertilizers or what insecticides can be used, and what they would run to if they were to contravene the law, and so on. Many co-ops call them educational meetings.

You asked how often they met; they would vary from area to area. Throughout the growing season they are probably a little less frequent. Some groups meet once a month. Some meetings take the form of a banquet.

Mr. MARCOUX: That is where you give them some information.

Professor GOBLE: Yes.

Mr. NESBITT: I have two questions. I am sorry Mr. Otto has left the room. I am going to suggest that his experience in real estate with farmers must have had to do with sub-divisions.

My first question is: I would gather from the evidence you have given and from others who have been here before you that with the large growers of fruit and vegetables and the large distributors such as chain stores there is almost no danger of the public getting any contaminated fruit and vegetables. However, with the smaller purchasers and distributors it is different. It often happens in the summer that a person sells sweet corn in the roadside stands and people from large cities and small cities like to come out and buy their vegetables because they are fresher. This is pretty standard practise in the summer months. It is certainly during the summer months that large quantities of fruits and vegetables are obtained not through the major growers and producers but from the smaller growers. There is greater danger in the sale and distribution of these fruits and vegetables on this small scale than from the larger producers. Would you say that is a great danger?

Professor GOBLE: Yes. I do not know what percentage the food and drug people are picking up but I would say that that type of outlet, as compared to the A & P, and the Dominion stores where you have larger buyers buying from a whole big area, is definitely safer.

Mr. NESBITT: In the winter time it will be non-existent, but in the summer time, certainly in Mr. Roxburgh's part of the country and my part of the country, people from large centres come out and make a business of buying these vegetables from the small farmer. It is a nice addition to a small farm income to sell sweet corn, potatoes, and so on. From your practical experience of this could you say whether there is a significant number of cases where fruit and vegetables which have been contaminated have been found to be on sale?

Professor GOBLE: Not that I know of. I know of one area this year where we gathered that an insecticide was put on close to harvesting. We did not think we could tell the food and drug directorate to go there, but they went to that area and they found this to be fairly satisfactory, even there.

Maybe I am not supposed to be asking questions but here is one I would like to put to you. We are talking here about an agricultural phase that I am not familiar with, home and garden fruit and vegetable dusts and sprays. There is quite a difference in materials contained in the different products. The trend is towards putting safer materials in those insecticides. Last year I asked the registration people whether they could restrict a label. Let us say I want to put up Goble's vegetable dust, and I am restricted by the fact that I cannot put D.D.T. on the label because the only warning on the label, if I put D.D.T. in that mixture would appear in very small print, such as "To be used 30 days from harvest on the edible part of crops". If I see there are worms on the cabbage, I would go out and dust it on there. I will not have my glasses on, and I can assure you I could not see the fine print of the label. I am wondering whether those sprays should not be restricted to having only the safe materials in them like methoxychlor.

I remember I asked one of the chemical companies three or four years ago "why do you not put methoxychlor instead of D.D.T. The toxicity is smaller". Methoxychlor is a little more expensive, but not much more for a little package. They said "We think people look for D.D.T." but I do not think they do so now. The registration people said they cannot do so. They said this label is safe if they follow the directions. I would feel that maybe there should be something that the registration people could say on this. I can say that Sevin is a chemical of low toxicity. By its chemical makeup it should have been a fungicide but it turned out to be an insecticide. Sevin is available now. I am not here to sell Sevin or methoxychlor but possibly these materials should not be permitted in a home and garden container. If you see a bug on your glass, for instance, you will spray it, and I think that methoxychlor is fairly safe.

Mr. BALDWIN: On this basic question of whether or not there could be any reasonable measure of control in so far as application is concerned, I agree with Mr. Nesbitt and Mr. Roxburgh that most farmers engaged in commercial production are bound to be careful to maintain the quality of their product, and I do not think there is much danger there. I am thinking in terms of what we had in western Canada and still in regard to feed control procedure which works downwards to the smaller municipalities which have inspectors. The inspectors have the right to go out and order crops to be destroyed if necessary. This is the sort of thing I am thinking of. A similar type of regulatory legislation would be the sort of thing which might be possible. The people in control would then be able to go to a farm and say "This we find is not acceptable. You have got to rectify this condition". Would that sort of legislation be workable in your province, do you think?

Professor GOBLE: It might be. I am thinking of one possible problem that could come up in Ontario in the next few years which might put us in the same category as large scale treatments which are required for grasshoppers in the west. We have not had an army worm problem for fourteen years, and the materials which we know are effective are the materials which are very persistent and which are cumulative in the tissues of wild animals, therefore in the milk of the animals themselves. These army worms come once in ten or twenty years. We do not have any regulations that say "You cannot use endrin." Dieldrin is also very effective. We have other materials which you recommended in the west for grasshoppers that are effective. Others are much more costly and probably not quite as effective. A grower would still be able to use this more effective chemical if he wanted to take a chance under the present set-up. I do not know if that answers your question whether we should have something that controls that.

Mr. BALDWIN: You may not be able to stop him from using it, but if he uses it with knowledge it might result in a condition of his product which would not be acceptable to the inspectors who might examine and find this condition. You would then apply the knowledge that possibly that crop might be subject to authority which orders him to destroy it or to be picked up and not used commercially. Knowing that this possibility exists, would that place a little more onus on the farmer? I am thinking of those few farmers—it takes a few to spoil it for the rest—who are disinclined to follow the advice and the recommendations and the educational programs which have been available.

Professor GOBLE: It is possible that you might make a regulation in which you could do something specifically about a situation like that. There are some materials that are safer than others. In the application of the highly toxic ones we would like to see the growers wear a proper mask such as they do with parathion. People in the medical profession know more about it. You do have

the safety valve of sickness, which is not a good safety valve. It is fortunate that there is something in the regulations for the phosphate poisoning. We think the growers are learning to use those materials and to differentiate as to which one they are using.

On a different subject, I am not sure myself that a big warning should appear on the products that are moderately safe. It is better to label the ones we are really afraid about from the point of view of toxicity and to make them stand out. Here is an example of the tobacco outline which we had last year on which we put a red warning in front. We thought it might help. We did not get a particular reaction from the growers but it is a safety precaution before they start using it. That was put on one or two of the outlines.

The CHAIRMAN: Might I ask you one question, Professor Goble? What is the working relationship or co-operation between the federal departments of government and the provincial governments? I am thinking here particularly of what you mentioned several times, that through the extension branches you had a good idea that perhaps somebody was using something incorrectly, and yet a few minutes later you said that you did not really want to tell on them to the food and drugs directorate, to have them go in and do the testing. How does this relationship work? Do you actively recommend at times to the food and drug directorate that perhaps there has been a misuse in one area and could they check this area out?

Professor GOBLE: The extension men that are out in the colonies are hesitant where the colony is regularly at somebody's farm. If they do find, and occasionally they do, that the farmer is putting on some material that he should not, he would hesitate to go directly to the food and drug directorate and tell them to look at his samples. Some of them say "I would not be asked back to the farm again" or else they would say to the farmer "Try to do better". That is the reason why they are more inclined to say "There is an area in here where there is some trouble, or might be some trouble". An example would be in the Essex-Kent county. There are some people there who are a little concerned about the corn cobs and husks going out for feed from the feed processing plant. Most sweet corn goes into that area in Ontario. Feed was short, particularly this year. Some of that can be made use of for beef cattle, but they were afraid some was going to dairy cattle. Checking was done and samples were sent to the food and drug directorate. I looked at the report and I say that it was quite favourable, but we kept our fingers crossed when it was being done. I know one of the men in the dairy department quite well, and he told me that tests were run and the ones that were more accurate indicated that there might be a speck of D.D.T. However, their straight analytical tests showed nothing. The food and drug directorate sent back a letter saying that although they could not say there was no problem, as far as they saw everything was all right.

The CHAIRMAN: You do generally notify them when you suspect there might be trouble in any specific area?

Professor GOBLE: Another area a few years ago was in the Prince Edward county. Around the area of Belleville the bean vines were going to the dairy cattle and those beans had been treated with D.D.T., an insecticide we did not think was the correct one to use, and we felt some others were better. In some samples they found D.D.T. in the milk. I am not sure whether any of them were fined, but this problem cleared up quite quickly and when they checked again the situation was improved. The next year it was all right. I am not sure there that they named the particular farmer. They only said that these bean vines were going out with D.D.T. on them.

The CHAIRMAN: In the areas where you meet with other provincial governments, are there any suggestions you could make that this cooperation between the two departments could be improved?

Professor GOBLE: I would not think so. We have very good cooperation with the Department of Agriculture. There are two phases. I am thinking of the Department of Agriculture as far as research and extension work is concerned. To quite a large degree they consider that extension is provincial because education is claimed to be provincial, and yet we have a working agreement. We have the working ability where federal people do some of the extension in the areas too, but the relationship is good. Our association with the food and drug directorate has been excellent. We got to know some of them quite well. We have the food and drug inspectors in the area coming to us and asking us in many cases what was being used in the farms. We tell them that these are the recommendations and we think they are following these quite well, although there could be cases where a chemical was being used and was not listed in the outline, that is one registered but not recommended.

Mr. WILLOUGHBY: Mr. Chairman, before we had our meeting this morning I had the pleasure of a few minutes informal discussion with Professor Goble. He brought up the subject at that time which was included in the brief and which I feel was included in some of the points made to this committee and which are probably familiar to some of the members of this committee. Some of it was completely new to me. It goes back to the question of labelling. This is in regard to the danger of these particular products being emphasized on the same label, the trade name is being used rather than the genetic name. Professor Goble drew my attention to the fact that there is a trade name substance which is commonly used in households called "Raid" and this substance has three different chemicals. The danger, as he points out, is that Raid, which is used for cockroaches, could be easily sprayed around the kitchen to catch flies. Could Professor Goble mention a few points in regard to this use of genetic names?

Professor GOBLE: Some of us have wondered about this. This is probably the best known example and people write to us about it. Actually there are three formulations—maybe more are registered. One is safe materials, the common ones which you would buy, the plant product materials. Then we have the one for cockroaches, and I would have to look at the label to be accurate on this. I believe it contains chlorane only. One is with D.D.T. I do not believe that if people had those three on the shelf that they could separate these very well. I am not sure whether the trade name Raid is so well known that people think this is one material, and they spray it all over the place. With safe chemicals it is fine but with the chlorinated type, I am not sure. If they are used according to directions, it is allright. You will find that with the chlorinated type, you must cover the dishes and food and you must not spray it around. I am not sure that people know that there are three different formulations.

Mr. WILLOUGHBY: You would suggest that this trade name should be used only in one product? The genetic name should obviously be the preferable one, but the trade name could appear in brackets afterwards.

Professor GOBLE: Maybe when you have a product that is outside of general usage it should be labelled in big letters such as "cockroaches" and they could have "Raid" in little letters afterwards. You could then have a warning that this is not a highly toxic chemical but a persistent one. This product could be close to dieldrin and aldrin as it is in the same group. D.D.T. is, comparatively speaking of low toxicity. If you ate a little dab of it, it would not do you too much harm, but it is cumulative. That is a very important point in the usage of these materials.

The CHAIRMAN: Are there any other questions, gentlemen?

If there are no other questions, we would like to thank Dr. Goble for coming down to speak to the committee and take time out from his regular duties to be with us today. I would like to thank him very much for his informative statement.

Gentlemen, there will be a meeting of the steering committee on Thursday evening at 7:30 p.m. It is our hope that we will have a full meeting one week from today in camera to discuss our committee report. Unless there are other feelings that we should set this meeting at a different date or time, we will proceed as planned and we will have it at 9:30 next Tuesday.

APPENDIX "A"

Statement of Rachel Carson before the
Subcommittee on Reorganization and International Organizations
of the
Committee on Government Operations

ENVIRONMENTAL HAZARDS

CONTROL OF PESTICIDES AND OTHER CHEMICAL POISONS
(June 4, 1963)

Mr. Chairman, I appreciate the opportunity to discuss with you this morning the problems of environmental hazards and the control of pesticides.

The contamination of the environment with harmful substances is one of the major problems of modern life. The world of air and water and soil supports not only the hundreds of thousands of species of animals and plants, it supports man himself. In the past we have often chosen to ignore this fact. Now we are receiving sharp reminders that our heedless and destructive acts enter into the vast cycles of the earth and in time return to bring hazard to ourselves.

The problem you have chosen to explore is one that must be solved in our time. I feel strongly that a beginning must be made on it now,—in this session of Congress. For this reason I was delighted when I heard, Mr. Chairman, that you were planning to hold hearings on the whole vast problem of environmental pollution.

Contamination of various kinds has now invaded all of the physical environment that supports us—water, soil, air, and vegetation. It has even penetrated that internal environment within the bodies of animals and of men. It comes from many sources: radioactive wastes from reactors, laboratories and hospitals, fallout from nuclear explosions, domestic wastes from cities and towns, chemical wastes from factories, detergents from homes and industries.

When we review the history of mankind in relation to the earth we cannot help feeling somewhat discouraged, for that history is for the most part that of the blind or short-sighted despoiling of the soil, forests, waters and all the rest of the earth's resources. We have acquired technical skills on a scale undreamed of even a generation ago. We can do dramatic things and we can do them quickly; by the time damaging side effects are apparent it is often too late, or impossible, to reverse our actions. These are unpleasant facts, but they have given rise to the disturbing situations that this Committee has now undertaken to examine.

I have pointed out before, and I shall repeat now, that the problem of pesticides can be properly understood only in context, as part of the general introduction of harmful substances into the environment. In water and soil, and in our own bodies, these chemicals are mingled with others, or with radioactive substances. There are little understood interactions and summations of effect. No one fully understands, for example, what happens when pesticide residues stored in our bodies interact with drugs repeatedly taken. And there are some indications that detergents, which are often present in our drinking water, may affect the lining of the digestive tract so that it more readily absorbs cancer-causing chemicals.

In attempting to assess the role of pesticides, people too often assume that these chemicals are being introduced into a simple, easily controlled environment, as in a laboratory experiment. This, of course, is far from true.

My own studies in this field of environmental pollution have been confined largely to pesticides and I am glad, Mr. Chairman, that you have chosen to begin with this highly important problem.

It seems to me that the most significant knowledge that has developed within the past year has been the piling up of evidence about the wide dispersal of pesticide chemicals, far beyond the point of application. I should like to cite some examples to illustrate this spreading contamination.

To begin on a small scale, we accept as fact the often repeated statements that it is not the deliberate intention to spray reservoirs. Yet studies by the Massachusetts Division of Fisheries and Game during the past year, covering to date 11 reservoirs that serve as public water supplies, show that fish in these reservoirs are heavily contaminated with DDT. The average amount found in the fish from all waters examined in the Sudbury, Assabet, and Concord regions of Eastern Massachusetts was 35.4 p.p.m.; the maximum concentration of 96.7 p.p.m. was found in two places, including the Farmingham Reservoir, a source of drinking water for a large area. It might be pointed out that this is nearly 14 times the legal tolerance for DDT in foods.

Although it is not difficult to imagine the paths by which domestic water supplies become contaminated, there are now examples of a different sort that defy easy or comfortable explanation. Such, for example, is the situation on Prince of Wales Island in southeastern Alaska. I am told by the Fish and Wildlife Service that its biologists have sampled resident fish in four drainage systems on this island and have found DDT, sometimes with its metabolites, in tow of them. There is no record of applications of DDT on this island. The nearest town, other than small native villages, is more than 50 miles away.

An even more remote region, not far below the Arctic circle, has been yielding extraordinary data to the Fish and Wildlife Service for several years. This is the Yellowknife region on the Upper Yukon River, in the Northwest Territory of Canada. It is an important waterfowl breeding area, wild, remote from any human settlements. No spraying of insecticides is known to have occurred within several hundred miles. Yet DDT and its metabolites have been found for several years both in the eggs of waterfowl and in their young. This alone might have been explained by the fact that the waterfowl are migratory and could easily have picked up the poison during their sojourn in the United States. Transfer to the eggs and young could then have followed. But there is no such explanation for the fact that native vegetation in this same area has now been found to contain residues.

The most disturbing of all such reports, however, concerns the finding of DDT in the oil of fish that live far at sea. Such residues have been found in fish caught off both coasts of North America, as well as off South America, Europe, and Asia. The species concerned include halibut living on the floor of the Pacific Ocean, and tuna, a fish of the open ocean that rarely comes close to land. Oil from some of these marine fish have contained DDT in concentrations exceeding 300 p.p.m.

All this gives us reason to think deeply and seriously about the means by which these residues reach the places where we are now discovering them. I must emphasize that no one can answer this question with complete assurance today, but I should like to call your attention to certain known facts that do have a bearing on the problem.

The ways by which pesticide residues may be transported over long distances are basically three: by air, by water, and in the bodies of living organisms, either indirectly through food chains or directly.

A report last year by the U.S. Department of Agriculture established the fact that aerial spraying comprises about 22% of the total acreage sprayed in the U.S. Studies by Professor George Woodwell of the University of Maine (and which confirm earlier studies by Canadian biologists) show that of the

D.D.T. used in forest spraying, less than half falls directly to the soil. Of each 0.5 lb. released by the spray plane approximately 0.2 lb. reaches its target. The remainder is presumably dispersed as small crystals in the atmosphere. These minute particles are the components of what we know as "drift"—the phenomenon that plagues every householder who receives contaminating spray from his neighbor across the street, or from his Government's spray planes several miles away. We are now beginning to wonder how vast the reach of "drift" may be. It was known a decade ago that the herbicide 2,4-D could drift as far as 15 or 20 miles in quantities sufficient to damage vegetation. The drift of insecticides is less readily observed, but when the matter is properly studied I predict we shall discover some startling facts.

It appears that little application has been made of our knowledge of atmospheric movements. Various factors influence the direction and speed of air currents. Among these is convection, or the upward flow of air which takes place when the ground temperature exceeds that of the air. Conceivably, this force could lift the very fine particles of spray materials to an altitude at which strong horizontal winds could come into play, effecting transport for long distances. We know this happens with other materials. Scientists of the Woods Hole Oceanographic Institute have studied the behavior of salt nuclei, drawn from the surface of the ocean and lifted high into the atmosphere. These tiny particles are carried great distances—at least as far as 400 miles. And we know that the upper atmosphere transports a whole assemblage of living objects—seeds, pollen spores, tiny spiders and insects—and through such transport oceanic islands are colonized. It is therefore a speculation that should be tested that the upper atmosphere may be carrying chemical particles as well as radioactive debris, and that the pesticide contamination of such remote places as those I have mentioned may be the result of a new kind of fallout.

Another factor that may contribute to atmospheric contamination is the tendency of D.D.T. to be evaporated from the surface of water. Therefore aerial spraying may not be the sole source of chemical pollution in the atmosphere. Various studies by the Public Health Service over a period of years have clearly established the fact that rains washing over sprayed lands carry pesticides as runoff into ponds, streams, and rivers. From here, we may assume, there is further transport into the sea and into the atmosphere.

Little thought seems to have been given to the possibility of transport in dust. Yet, on a small scale, we had a vivid example of this last April, when health officials on Long Island charged that the airborne dust from potato fields, carrying arsenic and other insecticide residues, was a menace to public health. This dust had compelled the closing of a public school on several occasions, because it clogged the ventilation system. On a broader scale, it is only reasonable to assume that dust from heavily sprayed lands, especially in some areas where conditions are right, may carry insecticides for exceedingly long distances. The Dust Bowl of the 1930's gave us our most dramatic demonstration of the long range transport of soil particles, but this is a phenomenon that goes on regularly in varying degree. When we remember that insecticides remain in soil for long periods, varying from months to a decade or more, the probability of this type of dispersal is increased.

A final and especially interesting means of pesticide transportation is that which occurs in living animals, whether directly or indirectly. Direct transportation may occur over many hundreds of miles, as when woodcock carry heptachlor from southern wintering grounds in the area of fire ant treatment all the way to breeding areas in the Canadian maritime provinces. A less obvious but exceedingly important method of transportation by living organisms is that which occurs when a chemical passes from one link to another

in a natural food chain, usually becoming concentrated as it goes. We now have a number of impressive demonstrations of this phenomenon. Several have been studied by biologists in California.

At Big Bear Lake, for example, toxaphene, a chlorinated hydrocarbon, was applied at a dosage of only 0.2 p.p.m. Later it was found that the minute plankton organisms in the lake had picked up this chemical and had concentrated it to a level of 73 p.p.m. The buildup continued through the food-chain, with fish containing 200 p.p.m. and a fish-eating bird (a pelican) containing 1,700 p.p.m. The story does not end there. Plankton organisms collected at the lake poisoned hatchery trout when fed to them. Ten months after the insecticide was applied to the lake, fish were again able to live in these waters. The lake was accordingly re-stocked with trout. However, when fillets from the trout were analyzed, they were found to contain 3 p.p.m. of toxaphene. I might add that this experience convinced the California Division of Fish and Game that toxaphene is unsuitable for rough fish control, but the experiment did provide some very instructive data on transfer of chemicals through food chains. The same sort of phenomenon has been worked out in detail at Clear Lake, California.

I should like to add a word about the concentration or build-up of the chemicals. There is nothing surprising about this—especially about the initial concentration by the plankton. Aquatic organisms are well known to have marked ability to extract minerals and other substances from the water and concentrate them. Marine organisms in particular can do this. For example, the percentage of silica in rivers is 500 times that in the sea, because marine diatoms withdraw so much to construct their shells. Huge quantities of cobalt are extracted from seawater by lobsters and mussels, and of nickel by various mollusks, yet human chemists recover these elements only with difficulty. Oysters concentrate zinc at a level about 170,000 times that in the surrounding water. It should come as no surprise, therefore, to find some of these marine invertebrates collecting and concentrating such chemicals as DDT. As Secretary Udall reported to you recently, oysters exposed to levels of only one part per billion for one week then contained 132,000 parts per billion in their tissues. The implications for the human being who likes to eat oysters—or other forms of marine life—are obvious. A current publication by two Fish and Wildlife Service biologists contains this statement: "In the sea, there is the possibility of a continuous re-cycling and concentration of the more stable pesticidal compounds until they pose a real threat to man's own welfare."

All the foregoing evidence, it seems to me, leads inevitably to certain conclusions. The first is that aerial spraying of pesticides should be brought under strict control and should be reduced to the minimum needed to accomplish the most essential objectives. Reduction would, of course, be opposed on the grounds of economy and efficiency. If we are ever to solve the basic problem of environmental contamination, however, we shall have to begin to count the many hidden costs of what we are doing, and weigh them against the gains or advantages.

The second conclusion that seems apparent is that a strong and unremitting effort ought to be made to reduce the use of pesticides that leave long-lasting residues, and ultimately to eliminate them. This, you will remember, was one of the recommendations of the President's Science Advisory Committee. I strongly concur in this recommendation, for I can see no other way to control the rapidly spreading contamination I have described.

There are several other recommendations. I would like to suggest, bearing on various specific aspects of the immensely complex pesticide problem. These are as follows:

1. I hope this committee will give serious consideration to a much neglected problem—that of the right of the citizen to be secure in his own home against the intrusion of poisons applied by other persons. I speak not as a lawyer but as a biologist and as a human being, but I strongly feel that this is or should be one of the basic human rights. I am afraid, however, that it has little or no existence in practice.

I have countless letters in my files describing situations in which a person has been subject to personal injury or to the loss of pets or valuable horses or other domestic animals because poisons from a neighbour's spraying invaded his property. Residents of Norfolk, Virginia, have informed me that they were told last winter that the State had the authority to apply poisons to their land but assumed no responsibility for injury that might result. It is a matter of record that dairy farmers in New York State suffered contamination of their land by Federal-State spraying for gypsy moths, with the inevitable result that their milk later contained illegal residues and was condemned by the State as unfit for market.

Under such circumstances, what is the citizen to do? You may recall the opinion of the United States Court of Appeals in the case in which a group of Long Island citizens sought an injunction to prevent a repetition of the spraying to which they had been subjected. Since no date for repeated spraying had been set the court could not grant an injunction, but it did make a significant ruling which I should like to insert in the record:

“. . . it would seem well to point out the advisability for a district court, faced with a claim concerning aerial spraying or any other program which may cause inconvenience and damage as widespread as this 1957 spraying appears to have caused, to inquire closely into the methods and safeguards of any proposed procedures so that incidents of the seemingly unnecessary and unfortunate nature here disclosed, may be reduced to a minimum, assuming, of course, that the government will have shown such a program to be required in the public interest.”

I have been informed by affected citizens in New York State that the current gypsy moth spraying has been done with no advance notice whatever. Some of these people learned of the spraying quite by chance two or three days before the planes began their work. They were told by their attorneys that in this limited time no appeal to the courts was possible. It is clear, therefore, that the intent of the Court as indicated above is thwarted in such cases.

As a minimum protection, I suggest a legal requirement of adequate advance notice of all community, state, or Federal spraying programs, so that all interests involved may receive hearing and consideration before any spraying is done. I suggest further that machinery be established so that the private citizen inconvenienced or damaged by the intrusion of his neighbour's sprays may seek appropriate redress.

2. In another area, I hope this Committee will give its support to new programs of medical research and education in the field of pesticides. I have long felt that the medical profession, with of course notable individual exceptions, was inadequately informed on this very important environmental health hazard. It was sobering to have the President's science advisors confirm this view by saying, “Physicians are generally unaware of the wide distribution of pesticides, their toxicity, and their possible effects on human health.” The Panel also found a complete lack of any federally sponsored research to develop methods of diagnosing pesticide poisoning, especially when this takes the form of chronic, rather than acute illness. I am told that in the medical schools today, because of the many subjects to be taught, the attention given the whole field of toxicology is greatly reduced. Yet this is happening at a time when toxic substances are being introduced into the environment at a rate never before approached.

The plight of the person affected by these poisons is pitiful. Many case histories have come to me in letters. As a rule these people can find no physician who understands their problem. Indeed, I remember several cases in current medical literature in which the physician, even though told of the patient's exposure to such relatively common insecticides as malathion or lindane, had never heard of the chemical and did not know the appropriate treatment. About ten years ago the American Medical Association had a special committee on pesticides which from time to time published authoritative information on the toxicology of these chemicals. I have seen none of these reports for several years. I do not know whether the committee is still functioning; if it is, it is hard to see why the American Medical Association last fall recommended that physicians seek information to allay their patients fears, not from unbiased scientific literature, but from one of the pesticide trade organizations.

I should like to emphasize, however, that many individual physicians are aware of the hazard and of the need for research in this field. Some of the most interesting letters I receive are from doctors. In what I believe to be the first recognition of this problem by a medical organization, the Illinois Medical Society on March 17th of this year approved a resolution directing attention to delayed and indirect effects of pesticides and calling for a thorough study of the problem. I should like to introduce a copy of this resolution into the record at this point.

STUDY AND EVALUATION OF TOXICANTS RESOLUTION

WHEREAS the total consequences to man and his renewable resources from the present widespread and often unrestrained dissemination of toxic substances into the environment are only vaguely known and some effects cannot yet even be surmised; and

WHEREAS the indirect and untoward effects of pesticides, insecticides, rodenticides and kindred chemicals are frequently long delayed, difficult to trace and apparent safe minimal accumulations in air, soil, water, fiber, food and all tissues can in time accrue to harmful or even lethal levels; and

WHEREAS these toxicants often have a profound latent effect on flora and fauna not originally intended for suppression or eradication; and

WHEREAS these toxicants are among the most potent ever known and such new incompletely evaluated substances are being developed annually; and

WHEREAS these lethal agents can be purchased by anyone, anywhere without adequate controls to guard against their misuse;

NOW THEREFORE, BE IT RESOLVED that the Board of Trustees of the Illinois State Medical Society go on record that efforts to manipulate ecologic balances by governmental agencies, private industry and individuals through the use of toxicants and radiation needs urgent and conscientious study for the development of wise and effective controls; and

BE IT FURTHER RESOLVED that in the opinion of the Board of Trustees of the Illinois State Medical Society the present state of knowledge dictates a policy of caution, inquiry, maturity of judgment and statesmanship; and

BE IT FURTHER RESOLVED that the Director of the Illinois Department of Public Health through the Bureau of Hazardous Substances and Poison Control be requested to undertake a study of all toxicants, current and future sold or used in Illinois, and prepare a report for appropriate distribution.

(Approved by Board of Trustees of the Illinois State Medical Society on March 17, 1963 in Chicago, Illinois.)

3. I should also like to see legislation, possibly at the state level, restricting the sale and use of pesticides at least to those capable of understanding the hazards and of following directions. To me it is shocking that these chemicals can be bought and applied by illiterate and even by mentally deficient persons. We place much more stringent restrictions on the sale of drugs—which at least are not sprayed from powerful machines! Someone wrote me recently about a man who was thought to have contracted hepatitis from a spray he had been using, making the pertinent observation that the man could buy the chemicals that made him ill with no restrictions, but had to have prescriptions to buy the drugs to cure him.

4. I should like to see the registration of chemicals made a function of all agencies concerned rather than of the Department of Agriculture alone. The deficiency in the present law has been pointed out in the report of the President's Science Advisory Committee. Many of the miscellaneous uses of chemicals, as in mothproofing, floor waxes, household sprays, and garden pesticides, have a direct relation to human health. It seems not only logical but necessary that the Department of Health, Education and Welfare should participate in decisions regarding the registration of chemicals so used. Similarly, many, probably the majority of pesticides are used at some time in such a manner that they affect wild life and commercial and recreational fishery resources. The Department of the Interior needs to have a voice in the registration and labeling of such chemicals.

I have already trespassed upon your time and patience, and I shall mention only two more recommendations.

5. It seems to me that our troubles are unnecessarily compounded by the fantastic number of chemical compounds in use as pesticides. As matters stand, it is quite impossible for research into the effect of these chemicals on the physical environment, on wildlife, and on man to keep pace with their introduction and use. It is hard to escape the conclusion that the great proliferation of new chemicals is dictated by the facts of competition within the industry rather than by actual need. I should like to see the day when new pesticides will be approved for use only when no existing chemical or other method will do the job.

6. In conclusion, I hope you will give full support to research on new methods of pest control in which chemicals will be minimized or entirely eliminated. You have heard from Secretary Freeman what some of this work is. One of the outstanding values of biological controls is that they are specifically adapted to a particular species or groups of species. Therefore, since our problems of pest control are numerous and varied, we must search, not for one super-weapon that will solve all our problems, but for a great diversity of armaments, each precisely adjusted to its task. To accomplish this end requires ingenuity, persistence, and dedication, but the rewards to be gained are great.

APPENDIX "B"

STATEMENT OF RACHEL CARSON

Before the

Senate Committee on Commerce

at

Hearing on S. 1250 and S. 1251, June 6, 1963

Mr. Chairman, I appreciate the opportunity to meet with you and your committee this morning. I am here to express my support of the general aims and purposes represented by the two bills under consideration, S. 1250 and S. 1251 and to offer certain suggestions for additional action.

Existing legislation and existing procedures for consultation do not afford our wildlife and fishery resources the protection they need. Events of recent years have provided many demonstrations of this fact. In *SILENT SPRING* I cited numerous examples of extensive losses, especially of birds and fishes, following government-planned and executed programs for insect control. The report of the President's Science Advisory Committee confirmed the fact that wildlife loss has repeatedly been an accompaniment of programs carried out precisely as intended, not necessarily of improper use or accidental overdosage.

As we learn more about the impact of pesticides on wildlife environments we find increasing reasons for concern. This is particularly true with regard to marine and fresh water environments. I should like to cite several examples from research conducted in the past year or two by state and federal wildlife biologists.

1. In Clear Lake, California, DDD was applied at very low levels for gnat control. It was speedily picked up by the minute aquatic organisms called plankton, by plankton-eating fish, by carnivorous fish, and by fish-eating birds. As it passed through this food chain it was progressively concentrated and large numbers of birds died. High levels of DDD were reported by California biologists in a 1962 report, from samplings made 5 years after the last application of the insecticide.

2. At Big Bear Lake, also in California, the chemical toxaphene was applied for experimental rough fish control, at a calculated dosage of 0.2 parts per million. Plankton collected four months later contained 73 parts per million of toxaphene. The peak concentration seems to have been reached in a fish-eating bird, a pelican, which was found after its death to contain 1,700 parts per million of toxaphene. In other words, the poison had been multiplied by a factor of 8,500.

From these two studies, which have been conducted with great attention to detail, certain conclusions are clear. First, there is no predictable safe level of application once poison has entered the food chains. Second, the only course of events that may be predicted with certainty is that low concentrations of poison tend to be increased as they progress through the food chains. Also, sublethal doses applied to a body of water have increased to lethal levels before they reach the final links of the food chains, the carnivorous birds or mammals.

From such studies we know, then, that advance assurances of safety, such as we have often received in the past, may have little meaning under actual conditions of application.

3. Other studies have demonstrated that many marine organisms are extremely sensitive to pesticides. This is a subject to which I hope you will give special attention in these hearings. Too little attention has been paid to contamination of marine environments. There are few published studies, but investigations have been under way for several years and the limited informa-

tion that has been provided has been most disquieting. For example, commercial shrimp, which spend the early stages of life in estuaries and bays, are thus in water that is easily contaminated from nearby agricultural lands, and is sometimes directly sprayed through carelessness. A kill of shrimp was reported in South Carolina last year after an application of heptachlor to surrounding areas for fire ant control. Although the application was only $\frac{1}{4}$ pound per acre, rains apparently washed lethal quantities into the water. Actually, an incredibly small amount is required to kill commercial shrimp—less than half of one part per billion.

From these facts it is clear that there may easily be serious conflicts of interests between such varied segments of our economy as agriculture and the commercial fisheries. It seems to me that there should be no automatic assumption that the agricultural needs should be served without regard to damage to fisheries—or in other situations, to wildlife. Yet in the past this has seemed to be the pattern.

This matter of conflicting interests, and of conflicting governmental mandates, lies at the heart of the problem this legislation is designed to solve. The application of pesticides is never a simple matter, involving only the chemical and the target organism. The trouble with existing procedures is that they too often seem to assume such a simple relationship. Whenever chemical poisons are distributed on any but the most restricted basis, a variety of interests are affected: community interests such as the pollution of soil, water, air, and food products; protection of public health; and preservation of wildlife and fisheries. It is reasonable and necessary that these various interests should receive consideration equal to that accorded the agricultural problem for which the spraying is proposed.

The legislation we are considering today is directed toward resolving the conflict between agricultural and wildlife interests. I am in favor of the provision that advance consultation between the Departments of Agriculture and Interior should be mandatory, rather than simply a matter of inter-agency courtesy. I agree also that consultation should be broadened to include the wildlife and fishery authorities of the affected states. The proposed cooperation in devising methods that will result in minimum damage of wildlife resources is of course necessary and desirable.

Beyond this point, however, I feel that S. 1250 becomes somewhat weak. In the event the agency proposing to use pesticides does not act on the recommendations of the Fish and Wildlife Service, a report is to be made to Congress "for referral to the appropriate committees." This seems to me indefinite. It seems to leave the problem dangling, without definite prospect of a prompt solution. It depends on too many variables: whether Congress is in session, what committee might be deemed "appropriate", what technical consultants were available to it, and so on. In a situation where all parties concerned would be eager for a prompt settlement of the disagreement, perhaps none would be forthcoming.

As perhaps you know, I speak not as an outsider, but as one who has had some 16 years' experience as a government biologist. I therefore am aware of the problems, the frustrations, the inevitable conflicts that arise when two or more agencies attempt to carry out their sometimes conflicting mandates. In the course of the more than five years I have spent in intensive study of the pesticide problem, I have arrived at the conclusion that the conflicts inherent in this problem can be resolved only by an independent board or commission to be set up at the level of the Executive Offices.

I interpret the report, "Use of Pesticides", recently issued by the White House, as a strong indication that the President and his advisors are dissatisfied with the present management of problems involving pesticides and are determined to strengthen and improve all governmental actions in this field.

Although the language of the report is mild, careful study of its recommendations shows that they are extremely far-reaching. The report clearly recognizes the many ways in which the government itself is involved in the use and control of pesticides, and, if I interpret it clearly, reflects dissatisfaction with existing conflicts and lack of coordination.

I suggest that this report by the President's Science Advisors has created a climate in which the creation of a Pesticide Commission within the Executive Department might be considered.

As I visualize this Commission, none of its members would be drawn from government departments. None would be drawn from the chemical industry. Conflict of interest should be eliminated completely. No member should be in the position of passing judgment on his own actions. The Commission should be made up of citizens of high professional competence in such fields as medicine, genetics, biology, and conservation. A small permanent staff of technical experts could carry on the continuing work of the Commission, receiving reports, keeping records on all governmental control programs. The Commission itself might meet at irregular intervals as occasion required. It would represent the highest authority on problems arising from past control problems, with power to resolve conflicts and make decisions on the basis of what the public interest as a whole demands.

There are many precedents in our governmental structure for the creation of independent commissions to deal with special problems. Some are large agencies, others are small. I do feel that the pesticide problem would require a large or cumbersome organization. I do believe that a small committee or commission of professionally competent and public spirited men could bring about far greater safety and sanity in the handling of pesticides, for the benefit not only of wildlife but of mankind.

May I also offer a brief comment on S. 1251? I am glad to see recognition given to the need for research on the effect of pesticides on fish and wildlife and for public education in these matters. I also agree that pesticide labels should carry adequate information or warnings as to hazards to fish and wildlife and how they may be minimized.

In addition, I should like to call attention to a statement in the report of the President's Science Advisory Committee. Regarding recommended amendments of public laws on pesticides, the Panel declared that protection of fish and wildlife resources will require affirmation of this intent by Congress. It recommended that after such action by the Congress, the Secretary of the Interior should actively participate in decisions concerning the registration of all pesticides for uses that may affect fish and wildlife.

I suggest that these recommendations be implemented now by appropriate modification of this bill.

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